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ILLUSTRATIONS.

Sculptured Fragments from the Ara Pacis Augustæ, Rome.....From Photographs.
Dominion of Canada Emigration Offices.....Mr. A. H. Hart, A.R.I.B.A., Architect.
House, Eglinton Drive, Glasgow .....Mr. A. N. Prentice, F.R.I.B.A., Architect.
Business Premises, Holborn .....Mr. W. C. Waymouth, A.R.I.B.A., Architect.
"Dalguire," Harrogate .....Mr. F. W. Bedford, F.R.I.B.A., Architect.
Stables, "Brahan," Perth.....Messrs. Bedford and Kitson, Architects.

Illustrations in Text.

Belfast Cathedral. Plan as Proposed..... Page 598
Dominion of Canada Emigration Offices. Plan... Page 608
Business Premises, Holborn. Plan..... Page 609
"Dalguire," Harrogate. Plan ..... Page 609
Stables, "Brahan," Perth. Plan..... Page 609
The Student's Column:—
Figs. 88 to 95 ..... Page 610

CONTENTS.

	PAGE
The New Belfast Cathedral	597
Evolution of Earth Structure	598
Notes	599
Architecture at the Royal Academy.—III.	601
Further Notes on Royal Academy Pictures	602
Letter from Paris	604
Thermit Welding	604
Tavistock-row and Recent Changes in Covent Garden	605
The Surveyors' Institution	605
Architectural Societies	608
Illustrations:—	
Sculpture from the Ara Pacis Augustæ, Rome	608
Dominion of Canada Emigration Offices, Charing Cross	608
House, Eglinton Drive, Glasgow	608
Business Premises, High Holborn	609
"Dalguire," Harrogate	610
Stables, "Brahan," Perth	610
The Student's Column	610
Competitions	611
Books—"British Engineering Standards Coded Lists," Vol. I.; W. R. Bowker's "Dynamo, Motor, and Switchboard Circuits for Electrical Engineers"; W. J. Dibdin's "Recent Improvements in Methods for the Bacterial Treatment of Sewage"; W. H. Knight's "Résumé, Historical and Practical, with Notes and Comments on the Subject of Sewage Disposal"; Major F. Smith's "Drainage, Sewerage, and Conservancy in Tropical Countries and Elsewhere"; "A Handbook of Sewer and Drain Cases, noted in 'The Surveyor and Municipal and County Engineer'"; F. C. Stockman's "Practical Guide for Sanitary Inspectors"; "The Pocket-book of Refrigeration and Ice-making"; J. W. Clarke's "Pocket-book of Tables and Memoranda for Plumbers, Builders, etc."; Laurence Duckworth's "Précis of the English Law Affecting Landlord and Tenant"	611
Books Received	612
Trade Catalogues	612
Correspondence:—	
Country Builders' Clerks	612
Obituary	613
General Building News	613
Stained Glass and Decoration	614
Sanitary and Engineering News	614
Miscellaneous	614
Legal:—	
Action against Builders for Trespass	616
The Liability for Defective Drains	616
Patents	616
Some Recent Sales	617
Meetings	618
Prices Current	618
Tenders	619

The New Belfast Cathedral.

THE new Cathedral for Belfast, of which the nave and aisles only are now built and roofed in, is an interesting example of an attempt to build a modern cathedral which should combine primitive Christian tradition with practical suitability for its modern purpose. We have as yet had no attempt of this kind in England. The Cathedral at Truro and the intended new Liverpool Cathedral are both entirely mediæval in their style and the lines of their plan, though the design for Liverpool presents some features which are original. These however are simply architectural, and have no relation to the ritual plan, which is wholly mediæval.

This treatment of the Belfast Cathedral has been, however, only a happy second thought, prompted partly by the practical difficulties in the way of realising a cathedral of the mediæval type on a large scale. It was the first intention of the promoters to procure an ideal site in the centre of Belfast; but at the present price of land in the growing city, now numbering 360,000 inhabitants, such a site could not be obtained at a less expenditure than 40,000*l.* to 50,000*l.*, which was prohibitive at the outset; and there seemed to be no alternative but to make use of the churchyard of old St. Anne's, which the church had inherited from earlier days. At the first commencement of the movement for building a new cathedral the idea of the mediæval type of cathedral was still paramount in the minds of all church builders of the Established Church, and a design for such a cathedral in XIVth century Gothic style was prepared, and is still to be seen on the walls of the Diocesan rooms. Illustrations of the interior and exterior of this are now before us. The interior is simply a replica of the typical forms of a mediæval cathedral of the proposed date. The cost of realising this design, even on the smaller scale necessitated by the limits of the St. Anne's site, and the fact that even then its congregational capacity would be but moderate, seem to have come pretty near to abolishing the cathedral project altogether for the time.

When the project was revived and put into the hands of Sir Thomas Drew as architect, his mind reverted to some of the suggestions made by that in general very conservative amateur Mr. Beresford Hope, in his "Cathedral of the Nineteenth Century," in which he half admitted, though in an apologetic manner, the unsuitability of the mediæval type of cathedral, and hinted at a possible return, in the next century if not in his own, to the early Basilican type of church for the modern cathedral.

Acting on this suggestion, Sir Thomas Drew considered whether it was possible "to devise a cathedral church to fulfil its essential purpose, not necessarily in the accepted style of architectural treatment, of a plainer and yet not undignified character, and which, fitted to the restricted site of old St. Anne's, would give Belfast a great congregational church for 3,000 or 4,000 worshippers." Contemporary architectural opinion supported him in this idea, and the result was the plan as appended here, with a short choir or chancel only, the actual choir being accommodated under the crossing, and the nave arcade being built not on clustered piers in the mediæval style, but on mere pillars which would occupy less space and render the nave more open for worshippers. It is this plan which is being carried out, and of which, as already remarked, the nave is now completed, temporary stalls for choir and clergy having been placed in it until the choir can be proceeded with. The cost of the work up to the present time has been 30,000*l.*, and it is estimated that the whole design can be completed for 100,000*l.*

As far as the plan is concerned, it seems a very good solution of the problem, except that, in a practical sense, we doubt the usefulness of the extended transepts, and are inclined to think that an even closer approach to the Basilica form would have been better.

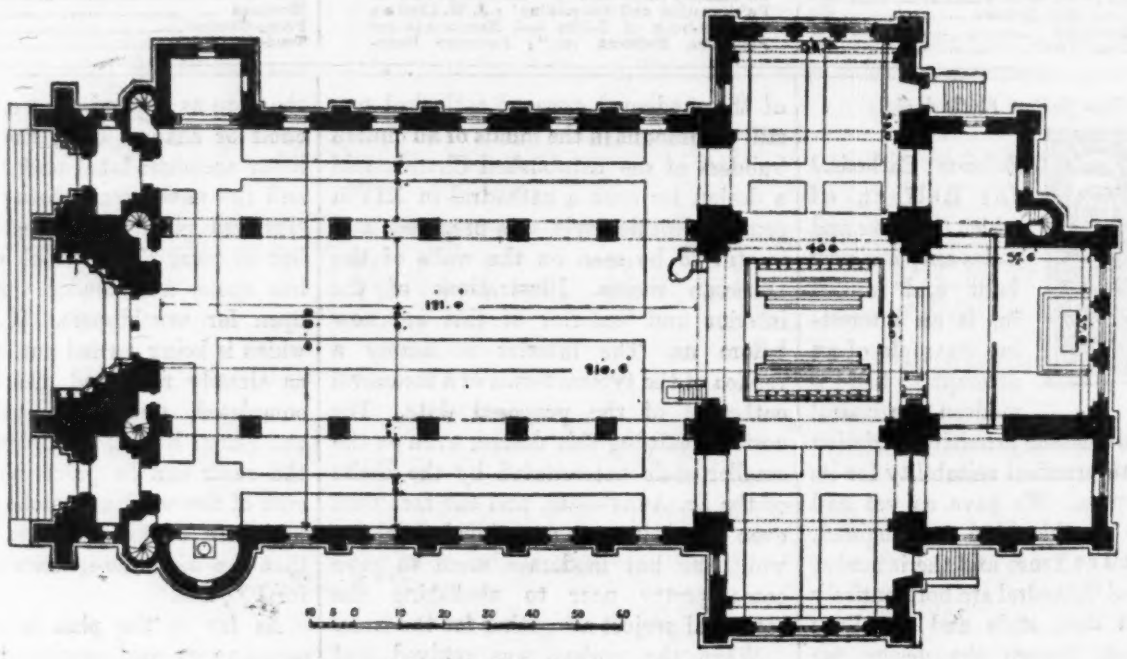
The question what should be the architectural treatment was the occasion of a great deal of thought and study on the part of the architect. He rejected the Italian style usually associated with the Basilica plan. While the Basilican churches of Italy were suggestive as to plan, he thought that this suggestiveness did not extend to the architecture of the Italian classic Renaissance, "which by association with countless secular and profane uses had ceased to be distinctive of a church." But this is surely very much a mere matter of association. Italians do not feel the incongruity suggested, nor Roman Catholics generally, whose thoughts on the subject all revert to Italy as the land of church building, and to the

classic St. Peter's as the mother church. Our idea is, if a Basilican plan be adopted, that the architecture should be treated on classic general lines, but with what may be called Christianised and symbolical detail. In St. Paul's it is the detail only that is pagan; its grand general design might very well have been carried out with a much superior and more intellectual character of detail. However, Sir Thomas Drew's argument would no doubt have much support in ecclesiastical and popular opinion. His feeling led him to a preference for the traditions of the early Romanesque round-arched style, which, even in the XIIth century, "presents a tradition of the dignities, grace and refinement of classic art." It hardly gives us that feeling, except in regard to some details; early French capitals, for instance, retain much of classic feeling and refinement; but the general impression of a Romanesque church seems to us as un-classic as anything could well be.

We quite agree, however, that the Romanesque style goes well enough with such a plan as this, and that its adoption would probably give more general satisfaction than the adoption of the classic style more generally associated with the Basilica plan. The exterior design, as shown in an illustration before us, but not suitable for reproduction in our pages, shows the end of the nave with a great triplet of round-arched windows, and in front of the lower part of it a western façade or triple porch, with a gable over the deeply-recessed central arch, and a decorative wall-colonnade above the heads of the side arches, connecting the whole together. This, we gather, is not yet built. The intended crossing tower is a massive square one with angle turrets rising high above the parapet line (they would possibly be better a little lower), the lower portion a plain mass of masonry, the upper with a triplet of large windows on each face, above a wall-arcading. Taking it as a whole, we should say that the architect has succeeded in giving Belfast (when the building is finished) a cathedral which has a great deal of the outline and proportion of the mediæval cathedral without adopting mediæval detail. It will be a fine building when completed, and under the restrictions as to site and expenditure already referred to it promises to be a very good solution of a very difficult architectural problem.

Internally the nave is not covered by a vault, but by a coffered wooden ceiling; this of course would be quite in keeping with a substructure designed on Romanesque lines. It is intended that ultimately the interior should be extensively decorated with sculpture and painting; and some important stained glass windows have already been erected, those in the west windows being by Mr. James Powell, on which special pains and study have been spent, and which is considered by the architect to be a remarkable effort in stained glass. The pulpit has been executed by Messrs. Farmer and Brindley from a design by the late Sir G. Scott, made originally for another purpose, and as may be supposed, in a style which does not exactly harmonise with the architectural treatment adopted for the building.

We hope that the Cathedral, once got so far, may be more speedily completed than was at first hoped, and that the architect may have the satisfaction of witnessing its completion.



Belfast Cathedral. Plan as Proposed.

EVOLUTION OF EARTH STRUCTURE.

WHATEVER may have been the character of its surface when our earth was "without form and void," it is obvious to the most superficial observer that it has subsequently undergone considerable modifications. The existence of marine fossils on mountain tops, of beaches raised high above the ocean level, and of submerged forests are a few of the most easily-recognised evidences of these. And that these changes are due to the two great natural forces, fire and water, is equally evident, though exactly how and in what relative proportions these agencies have acted are still largely matters of speculation. Scientists in the past have attributed now to igneous and now to aqueous forces the chief responsibility for the modelling and remodelling of the earth's surface, while more recent investigators have put forward reasonable grounds for believing that it is to the combined and more or less contemporaneous effects of these forces that the present structure and outline of the lithosphere are due. The work on "Earth Structure," by Mr. Reade, is a recent contribution to the solution of the problem.* While claiming a certain amount of originality for his theories, the author puts them forward as a natural development of the principles expounded by Hutton, Lyell, and indirectly by Darwin, which applied universally-recognised dynamic principles to the explanation of geologic facts. The author's training as an engineer and architect has peculiarly fitted him for dealing with the subject from this standpoint, while as an enthusiastic amateur he has escaped the fetters of the schools, which often tend to hamper and bind the scientific investigator. At the same time it must be admitted that the freedom of the amateur has dangers of its own, especially when, as in the present case, a hobby has to be pursued during the brief intervals of professional work. This drawback perhaps accounts for the absence of that conciseness and orderly arrangement demanded in the treatment of a scientific subject if the results arrived at are to be adequately appreciated. The author would probably be the first to admit that with more time at his disposal he could have materially condensed the 328 pages of which the volume consists. For want of such compression a somewhat excessive demand is made on the time and patience of the reader, while a more careful consideration of the chapter and paragraph headings and of the various divisions of the subject would considerably add to their intelligibility.

* "The Evolution of Earth Structure, with a Theory of Geomorphic Changes." By T. Mellard Reade, F.G.S., F.R.I.B.A., A.M.I.C.E. London: Longmans, Green, and Co. 1903.

The present volume is an amplification and rounding-off of the author's "Origin of Mountain Ranges" published some quarter of a century ago, rather than an entirely original treatise. For the benefit of those unacquainted with the earlier volume the theories it advances are recapitulated. Expressed shortly, these may be described as attributing the process of folding and building-up of mountain chains to the cumulative effects of recurrent lateral expansion—with its converse lateral compression—and consequent variations of loading. Since it was first advanced the author has further tested his theory by a series of experiments with a lead-lined sink subjected in everyday use to alternations of temperature which have produced folds and creeps similar to those found in mountain ranges, and with cakes of clay and other materials to which circumferential compression has been applied by the aid of an ingeniously simple encircling band. The results of these experiments are illustrated by an excellent series of photographs.

Following on from his earlier conclusions the author has formulated the theory, which the present volume is largely devoted to demonstrating, that the changes of level which the earth's surface has undergone in more recent geologic periods are due mainly to changes in the bulk or specific gravity of its constituents without corresponding changes in mass resulting from alterations of temperature. The various ideas as to the origin of these temperamental changes are fully discussed, and the value of quantitative analysis in relation to them is emphasised. Volcanic energy is thus shown to be important rather as an effect than as a cause of change, and as demonstrating the continuance of activity in the earth's laboratory, *i.e.*, of the life of the planet.

The limited extent of our actual knowledge of earth structure is well illustrated by a diagram showing the proportion of the lithosphere—consisting of the intrusive and consolidated igneous rocks, such as granite, and estimated at some thirty miles—to the magma or shell within which most of the fluctuations of volume creating elevation and depression takes place, and of both to the nucleus, these together making up the remainder of the earth's 8,000 miles diameter. The common class-room demonstration of a circle drawn by chalk, and limited only by the size of the ordinary blackboard, in which the thickness of the finest chalk line indicates the depth of the lithosphere, gives a vivid, if approximate, idea of these proportions. Of the nucleus nothing is known beyond the fact of its rigidity as deduced from the transmission of earthquake shocks.

It seems to be generally recognised that the proportion of continent to ocean has not materially altered from the earliest times. This is attributed by the author to the magnitude of the masses on which the earth's forces have to act and their slowness of operation, an explanation entirely at variance with the catastrophic theory held by many, especially of the earlier authorities. Space does not allow of our following the author in his interesting description of continental growth through the geologic periods, beyond the mere statement that he attributes this to the combined effect of subaërial denudation and chemical decomposition, by which the land is alternately worn down and built up again, and that mountain upheaval is not a separate process, but is connected with the formation of new land areas.

The consideration of the characteristics of the rock groups of the great periods is a branch of the subject that may more especially appeal to architects as affecting the study of materials with which they have to deal. Here again, in opposition to the idea that the similarities which are found to exist between the various groups are due to cataclysmic convulsions, and also to the idea that their uniformitarianism is due to continuity and recurrence—of which Lyell was the great exponent—the author considers these similarities are evidence rather of orderly development.

A section of the volume is devoted to oceanography, the study of which has been stimulated during recent years by the necessity of exploring the ocean bed to ensure that telegraphic cables are laid to the best advantage. But this branch of the subject is still only in its infancy, and the explanation of the ocean "deeps," which are known to exist as basins, and which constitute one of the chief differences between land surfaces and those of the ocean bed, has still to be formulated.

The latter portion of the volume is devoted to the consideration of slaty cleavage, attributed by the author to temperamental pressure and movement on a base chemically and mechanically fitted for its production and illustrated with an interesting series of photographic sections, and also to the reproduction of addresses given by him as President of the Liverpool Geological Society and otherwise. These necessarily recapitulate to some extent matter scattered throughout the volume and might well be relegated to an appendix. The book contains so much of value and of interest that it is with regret we find ourselves unable to accord it unqualified admiration, but the hope may be expressed that, before a second edition is called for, the author may find time to apply the same methodical care to its revision that he has devoted to the experiments on the results of which he has based his theories. If at the same time its specific gravity—to use a technical term—could be reduced, it would greatly add to the comfort of its perusal, and we could then heartily recommend it as both instructive to the student and stimulating to the geologist.

NOTES.

A Lightning Demonstration.

ON Saturday afternoon last Sir Oliver Lodge gave at the Institute of Architects, to the members of the Lightning Research Committee and some others interested in the subject, a practical demonstration of the action of lightning, more especially as regarded lightning conductors. The electrically charged cloud was represented by a thin sheet of metal mounted on non-conducting standards charged from a battery at pleasure, and placed in a position sloping downwards from front to back, so that the model lightning conductors could have their points brought nearer to or further from the under surface of the "cloud" by shifting their positions on the table. Some of Sir Oliver's conclusions were much at variance with what are popularly accepted. He placed in operation successively conductors of three different substances—copper, iron, and wet string. The copper was the most intense and rapid conductor, producing a sharp crack at the flash; the iron took it with less noise, the wet string with hardly any, yet it was efficient in protecting the two other conductors. Wet string is of course impossible in practice (the thunder-shower performs some of its function, however, in relieving pressure), but Sir Oliver maintained that iron was quite as efficient a conductor as copper—and more, that the intensity of action of copper was more likely than iron to set up side-flash, which, in protected buildings, has been the origin of most lightning accidents. Sir Oliver also illustrated and described his classification of lightning into two kinds, which he called "A-flash" and "B-flash." The former was the normal discharge of lightning from an overcharged cloud direct to earth; the B-flash occurred when a large cloud discharged into a smaller one, generally though not necessarily below it, which was overcharged suddenly and discharged to earth with great violence. Sir Oliver Lodge proceeded to show, by several illustrations, why the B-flash might be expected to be more sudden and intense than the A-flash, and proportionately more difficult to protect against, though he would not say that all lightning injuries had resulted from B-flashes. The practical outcome of the demonstration was that a building should have as many points of protection as possible, and that (if we accept Sir Oliver's teaching) the copper lightning conductor is dismissed with costs.

Drain or Sewer.

THE question of "drain" or "sewer" has again come before the Courts in the case of Thompson *v.* Eccles Corporation, and the three judges constituting the Divisional Court have declared that it is impossible logically to construe the legislation on the subject. The local authorities called upon the appellant, in this case the owner of a block of seven houses, to abate a nuisance arising from the drainage of one of them and to reconstruct the sewer or drain. These seven houses were drained by means of a 9-in. pipe, which passed under their cellars and led into the respondents' sewer. This 9-in. pipe, however, was a continuation of, and received the drainage from, a 6-in. pipe which drained two blocks of six houses, in different ownership, before it reached the respondents' sewer. By section 4 of the Public Health Act, 1875, "drain" is defined as "any drain of and used for the drainage of one building only or premises within the same curtilage and made merely for the purpose of communicating therefrom . . . . with a sewer . . . ." But section 19, sub-sect. 1 of the Public Health Acts Amendment Act, 1890, enacts that

"Where two or more houses belonging to different owners are connected with a public sewer by a single private drain," then the provisions of the Public Health Act, 1875, as to nuisances from drains are to apply. Sub-sect. 3 provides also, "For the purposes of this section drain includes a drain used for the drainage of more than one building." The judges found it difficult to determine what meaning should be given to the words "a single private drain" in sect. 19, since under section 4 of the Act of 1875 a drain connecting different buildings (even in the same ownership) with a sewer, ceases to be a drain. The Court intimated that the fact that a drain was wholly laid on private land was not sufficient to render it a private drain, and this section was construed only to apply to a drain draining more than one house for the profit of the maker of the drain, or by special agreement with the local authority, and to have no application to the circumstances under consideration. This decision conflicts with that of the Divisional Court given in 1896 in the case of Bradford *v.* Mayor of Eastbourne, in which the decision was that the Act of 1890 extended the definition given in the Act of 1875; and there is a serious conflict in the decisions on the point. The judges who decided the present case intimated some doubt whether this legislation was not the result of a misconception of the law, and also expressed a hope that their decision might be reviewed by higher tribunals. We, however, trust that the promised legislation will soon be forthcoming, as it is extremely undesirable that the daily relations of householders should be controlled by legislation incomprehensible even in the Law Courts.

Steel in American Buildings.

In a paper read before the Iron and Steel Institute Mr. B. H. Thwaite traces the early history and later development of steel frame construction as applied to lofty building design in the United States. Although a considerable part of this paper is devoted to details which are already perfectly familiar to most of our readers, it contains reference to several points that are worthy of note. The author shows that the new system of building has practically revolutionised professional constructional organisation in the United States, for the consulting engineer and the ironworks have largely displaced the architect and the ordinary builder, but the architect still finds scope for the exercise of his art as the colleague of the engineer. As steel frame construction seems likely to be more largely used in this country as years pass by, it is highly important that architects and builders alike should qualify themselves for dealing with the coming development by making themselves thoroughly acquainted with the theoretical and practical features of such work. The author shows that the steel-framed system enables buildings to be constructed in one-fourth of the time required for their erection by ordinary methods, thereby reducing to a minimum discomfort to the occupants of neighbouring property and interference with street traffic. He further urges the suitability of steel for fire-resisting construction when the steel is properly fire-guarded, citing as examples buildings which came unscathed and unhurt out of the disastrous fires at Baltimore, Chicago, and Rochester.

High-speed Railways.

In an important paper read to the Institution of Electrical Engineers last week by Mr. Alexander Siemens, a description was given of the high-speed electric railway experiments which were recently made on the Marienfeldehossen line near Berlin. All the data given in the paper were taken from the official reports, and will be of the greatest use to English engineers. The experiments prove conclusively that it is possible to collect high tension currents, even in unfavourable weather, from overhead conductors, at speeds up to 130 miles per hour. Mr. Siemens stated that at these high speeds birds were overtaken and killed by the train, and that at the conclusion of the run the front of the train was covered with bees, gnats, etc., which had been smashed by the impact. The experiments also seem to have settled the vexed question of the resistance of the air to an express train. The agreement between the formulæ arrived at experimentally, and those given by Drs. Chree and Stanton is remarkable and very satisfactory. As Mr. Siemens stated, the formula is virtually involved in a theorem given by Newton in the section of his *Principia* which deals with projectiles; but Newton gives no numerical constant. We are now able to predict that if ever an express train move with a velocity of 200 miles per hour the power expended per square foot of sectional surface at right angles to the direction of the motion will be greater than 60 horse power. It seems to us that about 150 miles an hour is the limit for the speed of express trains. At speeds of over one hundred miles per hour there must be practically no curves on the lines, owing to the enormous centrifugal forces developed. The experiments as to the proper shape of the front of the train were unsatisfactory. In his reply to the discussion Mr. Siemens stated that it should be a paraboloid of revolution, but this result is too indefinite to be of any value, as the shape of this surface depends on the length of the frustum of the paraboloid we use. A flat surface is a limiting case of a paraboloid. The proper shape for a projectile has not yet been worked out mathematically, and the proper shape for the front of an express train is a much more difficult problem theoretically, owing to its closeness to the surface of the earth, which disturbs the lines of flow of the air and therefore has to be taken into account.

"The Life of the City."

This was the title adopted by Mr. Francis Masey, for an interesting paper read recently before the South African Association for the Advancement of Science. The Association is of recent origin, the first "Report" (in which Mr. Masey's paper appeared) having been issued exactly a year ago. Mr. Masey, being an architect, deals almost exclusively with the brick-and-mortar aspect of his wide subject, or—to use his own words—with "some of the contributions made up to the present time by physical science towards . . . the promotion of physical health in the city life." We may add that he confines himself to the problem presented by South African cities, and particularly by Cape Town. He suggests that it is the duty of the municipality to prepare a comprehensive plan for the extension of the city and for the improvement of existing thoroughfares, and advocates wide streets planted with trees, thorough scavenging of the streets, the regulation of the height of buildings, and of the methods of construction and sanitation. There is nothing particularly novel in the paper, but the author wisely lays stress on the importance of framing regulations which will be adapted to local conditions. His brief account of the growth of mediæval cities contains the following curious passage:—"More often, however, we can trace the city's growth from the church, of which it forms the centre." To build a church with a city in its centre must have taxed the ingenuity of the mediæval master-builders.

Sanitary State of West Wickham.

Dr. R. W. Johnstone's report to the Local Government Board on the sanitary circumstances and administration of the parish of West Wickham, in the Bromley rural district, states that complaints of the unsanitary state of the village of West Wickham have been received by the Board at intervals during the past twelve years. Dr. Johnstone, on visiting the place, found that as a rule the house yards are unpaved or paved with cobbles or tiles, the ties being frequently broken and defective; and that the chief method of excrement disposal is by means of water-closets, the majority of which are hand-flushed. Most of them are kept clean, but a few instances were seen where their condition left much to be desired, owing either to inadequate flushing or to careless emptying of house slops upon the seats and floors. There are also a number of pail closets and earth closets. Some of the pail closets are situated in dilapidated sheds with leaky roofs, and some were in a filthy condition through overflowing. In addition, considerable nuisance is caused by the removal of the contents, and their disposal upon land, a task usually undertaken by the owner. House drains are for the most part of earthenware pipes jointed with cement. They are invariably connected with cesspools, which are usually of large dimensions. The cesspools are scarcely ever constructed of impervious material, and the consequence is that they quickly fill with ground water, and in wet weather overflow into roadways, house yards, and sometimes into the houses themselves. The report states that it is necessary that some remedy should be found for the insanitary state of affairs at present prevailing:—

"The cost of contracting for the emptying of cesspools was found by the District Council to be prohibitive. Moreover, such a plan has the disadvantage that the cost increases with the increase of population and rateable value. The main bar to its adoption, however, is that owing to the water-logged nature of the soil in parts of West Wickham, it would be a matter of great difficulty and expense to provide watertight cesspools, without which a system of cesspool emptying would be ineffective.

"The alternative is a sewerage scheme. With

the increase of population and rateable value the sewer rate would diminish, and the fact of having sewers would tend to increase the rateable value by encouraging building."

Haymarket Theatre.

IN order to comply with the requirements of the London County Council in respect of the public safety Mr. C. Stanley Peach has prepared plans for Mr. Harrison, the lessee, for improving the interior of the house mainly by way of precautions against fire and of providing better means of rapid egress. The present interior was remodelled for Sir Squire Bancroft by C. J. Phipps in 1879; seven years ago Mr. Harrison effected some structural alterations of the back portion of the building. The theatre was built, after Nash's plans and designs upon the site, measuring about 61 ft. by 135 ft., of Nos. 8, 9, and 10, Haymarket, and premises in Suffolk-street at the rear, leased for a term of ninety-nine years from the Crown. It was erected upon ground adjoining—with an interval of but a few feet—the south side of the former house, illustrated in the *Builder* of January 2 last, after a drawing by Schnebellie, which was originally built for John Potter and opened by him on December 29, 1721, as the New French Theatre with a company of comedians from Paris. Subsequently called the "Little Theatre in the Haymarket," it was used for English and Italian opera. Cibber, Harper, and others removed thither on their secession from Drury Lane Theatre, and there, in 1727, was produced the "Beggars' Opera." Macklin was succeeded as manager by Foote, who in July, 1766, obtained letters patent under the Great Seal, and enlarged the house at the side and at the rear, and added the portico shown in our view. In 1820 Morris and Winston, as successors of George Colman the younger, pulled down the former house, and on July 4, 1821, opened the house built for them by Nash. The clock given by Foote to the green-room passed into the possession of Sir Squire Bancroft. Amongst the "first appearances" were those of Henderson, Bannister, Mathews, Liston, Elliston, Edmund Kean, and Young; Lavinia Fenton (Duchess of Bolton) and Eliza Farren (Countess of Derby); and there in February, 1851, Macready gave his final performances, during the lesseeship of Benjamin Webster.

The Leicester Galleries.

AT the Leicester Galleries two collections are on view: Mr. Elmslie's water-colour drawings illustrating "Japan and its People," and Mr. Nico Jungmann's collection of paintings which might be entitled "Holland and its People." Mr. Elmslie's drawings, in the main, are rather of what we may call topographical than artistic interest; they impress one as being very careful and accurate representations of Japanese personality and life, but are not for the most part drawings which would compel attention from their artistic interest alone. Among the exceptions are the single figures entitled "A Dancer's Musician" (42), "A Girl Reading" (49), and "A Musician of Sacred Music" (69). These are very careful studies of countenance, costume, and accessories; and "The Japanese Peasant Woman" (33)—stated to be "the general type, not made up in any way"—is a very good firm piece of figure painting. In other respects this collection is a very interesting illustration of Japanese life and surroundings, which was perhaps the principal object. The artist shows us the "Dinner Party" (31), where the guests sit on cushions on the floor and are entertained by (apparently) a hired dancer; "The Rustic Mode of Making Rice Flour" (26), a most primitive piece of mechanism; "The Cloisonné Studio" (12), "The Jinrickshaw Man and His Fare" (14), and many other incidents of Japanese life. One or two pictures of gardens are curious as showing how completely the old blue china garden pattern represents the real facts of a Japanese garden, showing in a naive elevation what these pictures show in realistic perspective. Mr. Jungmann's manner of painting the Dutch, or certain types of them, is well known in London now; he has made a style of illustration and execution of his own, and his figures are highly characteristic; but the artificial style, with the doll's houses and Noah's ark trees, gets wearisome before one has gone through the collection. It is a manner of painting which at first attracted people by its novelty and individual character, but it is not genuine art, and will not keep its attractiveness after the novelty has worn off.

The Academy and the Chantrey Bequest.

THE *Spectator* returned last week to its attack on the Royal Academy in respect of the administration of the Chantrey bequest; a criticism with which, on general grounds, we are entirely in sympathy. There can be no doubt that the Academy, whether from short-sightedness or from whatever other cause, has practically used the bequest for buying in pictures and sculpture—mostly pictures—from its own exhibitions, and in many cases by its own members, and that a good many of these purchases have not represented that very high class of work which was contemplated in the decided and almost stringent terms of Chantrey's will. At the same time the assailants are somewhat too sweeping in their condemnation, and thereby weaken their own case. Among the works which ought not to have been purchased the *Spectator* includes, among pictures by Academicians, Millais' "Speak! Speak!"; and among those of outsiders Mr. J. Clark's "Early Promise." Both these condemnations are surely quite uncalled for. Millais' "Speak!" is a most remarkable picture, and would stand among the leading works in any collection of modern paintings; and Mr. Clark's "Early Promise," though only what is called a *genre* picture, was quite exceptional as such—a most delicate and refined piece of character painting, which made a reputation for its author at once, though we hardly think that he has ever equalled it since. It can hardly be supposed that Chantrey meant to exclude *genre* painting, so long as it was first-rate of its kind; and "Early Promise" certainly is so. The banning of these two purchases shows a want of sound judgment on the part of the critics of the Royal Academy, and would tell against them if there were any formal inquiry into the administration of the Chantrey bequest.

ARCHITECTURE AT THE ROYAL ACADEMY.—III.

TO THE ordinary visitor, and perhaps to the architect, domestic design is doubtless the most attractive of the various kinds of work exhibited in the Architectural Room. It is the subject nearer the reach of general understanding, and one that is usually represented in pleasing variety by pretty drawings. It would further appear to be the aim of the authorities, not so much to encourage the art as to make this department popular by hanging little that is not prettily rendered to the exclusion of illustrations of a more technical and diagramatic nature, which are inseparable from a critical study, and behind which lies the true merit in design.

Of the larger houses to be seen, few are entirely new conceptions, the greater number representing enlargements of existing mansions; and in almost every case no idea is given of the former condition of the places, and consequently no adequate opinion is to be formed of the design for which the exhibitor is actually responsible.

Foremost in importance is "Eynsham Hall, Oxfordshire," by Messrs. Ernest George and Yeates (1,490), a large stone house in the Elizabethan manner with an H-shaped plan. The drawing shows two loggias open to the terrace between the wings, reminiscent of Holland House and Bramshill. The plan is interesting, having, with the usual apartments, provision for an estate office arranged in connexion with the owner's business and secretary's rooms. The kitchen and general offices must be located in a basement, but of this there is no outside evidence. The external open staircase is nicely designed, and suggests the fact that there is much scope for a greater architectural treatment of these everyday features than is often the case. The parapet, with its carved strapwork panels, is quite of the period, but seems to hide the roofs. The chimneys are specially grouped for this drawing and do not bear out the plan, which is here given to a large size, although scale and compass points are missing. "Ruckley Grange, Shropshire" (1,505), by the same authors, is a smaller house, in the design of which the roofs take a prominent place. An elevation (without scale) is given in addition to the view, and although there is no information as to the plan, the house is designed with character and in very good scale. The roofs are pitched at 45 deg., which is not a very satisfactory angle and was not generally resorted to by the XVIth century builders whose work is followed in this design. These are two excellent drawings by Mr. Ernest George, whose contributions have helped to enhance this annual show for many years.

"Additions to Branches Park, Newmarket" (1,491), by Mr. G. Hornblower, has nothing, beyond a scrappy key-plan on the frame, to convey what is new and what old. As a late XVIIIth century mansion it is not of the best, and as a finished residence it is even less interesting. There are too many planes and too many projections for a design of this severe type to be considered happy.

No. 1,489 is a series of delightfully fresh sketches in line and colour of an important house, "Rosehaugh, Ross-shire, N.B.," of which Mr. W. Flockhart is the architect. Here is grandeur in a fine composition, the design of which is based on what is best in French Renaissance. A large tower with angle turrets stands foremost in the design, whilst high-pitched pavilion roofs and large window projections, terminating in ornate gables, rise at prominent points. A successful contrast is provided by the massiveness of the heavily-buttressed retaining walls of the gardens consequent upon the hilly nature of the site. Several coloured sketches of interiors are given in No. 1,504 in which it is seen that schemes based on various English styles are introduced. "The William and Mary bedroom" is perhaps more free from tradition than "The Jacobean bedroom." "The Tower Smoking Room fireplace" is a charming drawing of a heavy, sculpturesque stone mantelpiece, showing strongly the influence of Alfred Stevens; the fireplace opening, however, is small in relation to the whole. Although these sketches are brilliant, too much is left to the imagination; a plan of the house and of the lay-out would have doubled their value.

Mr. A. N. Prentice contributes two clever drawings, done in the best Academy method, of "Chelwood Manor, Sussex" (1,547 and 1,548). This is an extensive house on a sloping site,

having a local stone ground story and very busy half-timbered upper floors, finished with tiled roofs and large brick chimneys. Apart from the perspective drawings, the plan gives the information that this is a large house, but the use of half-timbering is not, in our opinion, a suitable style for a work of this magnitude. If tradition stands for anything, there are at least six houses in this composition; in other words, the detail does not lend itself to a broad treatment; and it is here noticeable how disturbing is the multiplicity of parts. We gave an illustration of the design on April 30 last. No. 1,574 is a set of scale drawings, showing the remodelling of "Guisborough Hall, Yorkshire," by Mr. A. C. Martin. Plans and elevations both before and after the alteration are given, whereby we are enabled to form the opinion that the development of the house is in every way an improvement; and a satisfactory change in the fronts is effected by the use of a good stone treatment. The scheme is worthy of a better rendering. "Proposed additions to House in Cheshire" (1,576), by Mr. T. M. Shallcross, conveys no idea of which part of this rough cast, half-timber and green slated house, comprises the additions, for it is all rendered alike. The weird drawing gives a feeling of desolation, and the absence of figures and plans intensifies the mystery.

Mr. Leonard Stokes's most important contribution is "Sketch design for Minterne House, Dorset" (1,577), shown in two good pencil drawings. This large house, to be built in stone, has an interesting plan, in which the chief feature is a long, vaulted central corridor, on the south side of which are located the principal apartments, including a billiard room. The latter takes the form of a wing set at an oblique angle from the line of the main front, and serves to screen some of the servants' quarters from the garden. A large square tower rises at the east end, and the kitchen block projects on the north front giving a courtyard effect. The fronts are designed, broadly speaking, with an ornate XVIth century feeling; the hall windows have traceried heads and transoms, whilst the two wings referred to have a much simpler treatment, more in keeping with the historical use of the material. There is great variety in planes and detail; the rusticated quoins rising above the roof lines as piers, have, however, very little meaning, and the battlemented parapets, together with the variety in dormers, add to the disturbance which detracts from the merit of an essentially excellent house.

No. 1,619 represents a sort of Monte Carlo residence in a clever water-colour drawing. The catalogue puts a totally different complexion on the exhibit, and as no plan is given to explain that the drawing illustrates alterations and additions to a house, we fail to see what purpose is served by hanging it. It is substantially one of the "pretty pictures" to which we referred above. A very prominent position is allotted to "Additions to Hursley Park, Hampshire" (1,640), Messrs. A. M. Mackenzie and Son, architects, the reason for which we are also at a loss to understand. There is again no indication of the parts comprising the additions; but whether the drawing represents the original or the altered design there is nothing to merit such a conspicuous position. It would be interesting to know upon what lines the Hanging Committee proceeds to select, and then to place, drawings of this description.

"Burton Hall, Chester" (1,639), by Messrs. Nicholson and Corlette, is a house with some life in it. The happy combination in materials—red sandstone and green slates—is broadly handled, and the overhanging eaves and green shuttered first floor story enhance the design. An extensive formal garden scheme is shown but no plan of it, or yet of the house itself, is given. Of the few remaining larger houses, "Carriage Court, Tylney Hall" (1,455), by Mr. R. S. Wornum is perhaps the most important. Elizabethan in style, a less symmetrical design than usual is shown by a slight ink sketch. No. 1,589 is a "House in Kensington Palace Gardens," built upon a spacious site which seldom falls to the lot of an architect in London. Mr. E. P. Warren has produced a square plan with a basement story. A Georgian-like massing of the brick and stone materials is imparted to the exterior, but a more orthodox use of XVIIIth century detail and proportions would have added to the interest of the design which is rendered by an elevation and two plans, from which scales, etc., are missing.

In the smaller domestic work the usual range in subject and variety is to be seen. Taking the order of the catalogue, we find "Pavilion for the Consolidated Clubs, Magdalen College, Oxford" (1,429), somewhat skied. The author, Mr. R. P. Jones, has produced a design which is a distinct advance upon the average erections of this kind; a reproducton of the drawing appeared in our pages of February 20. "A Pair of Houses" (1,435) is a modest drawing of a stone-built dwelling, in which the architects, Messrs. Freeman and Ogilvy, show due regard to the material. "Reception Hall, Rectory Farm, Streatley" (1,443), is an interior subject by Mr. O. P. Parsons, with but little architecture in it; there is, however, a remarkable expanse of gold mount and frame surrounding the drawing. No. 1,454 is a very well drawn interior of a Jacobean order, designed with excellent feeling by Mr. T. Johnson. "House in Russia" (1,458), by Mr. M. H. Baillie Scott, is a composition in which a great effort is made to interrupt as little as possible the large expanse of rough cast walls and red tiled roofs, and the windows and other disturbing elements are, therefore, contrived to this end. The main roof rises to a very considerable height, and should look well, we imagine, if a good material be found for its covering. An external open staircase is shown at one end of the principal front, but only one chimney appears in this—the important—part of the house, and no plan is present to explain the reason. "Bronygarth, Woldingham" (1,446), is another rough-cast house, which the author, Mr. W. R. Davison, shows by a good sized plan, two exterior and one interior views. A verandah is introduced on the south and west fronts, terminated by square bay windows of the dining and morning rooms. The house is probably designed for the site and not to suit the compass points, for we find the morning room at the north-west angle. A serious defect is disclosed by the plan, where it is seen that the cook will deprive herself of the light necessary for the important culinary operations. Kitchen ranges, of all places, require a side light. In the "House at Knowle, Warwickshire" (1,462), Messrs. Buckland and Farmer are certainly picturesque in their methods. The design is terribly cut up, however, and is only saved from failure by the sober lines of the main ridge. "No 75, Cheyne Walk, Chelsea" (1,470), designed by Mr. C. R. Ashbee, has the appearance of being a small house. The interior view, however (1,444), gives quite a contrary impression. Anyhow, there is something pleasing in the recessing of the various stages seen in the former drawing, where everything has been subordinated to the emphasising of the principal floor, which is lighted by a range of five long windows. Two lower stories project considerably toward the street, but the flat which covers them is provided with a poverty-stricken balustrade consisting only of posts and chains. This is the only note of affectation in a simple and clever design.

Several street fronts are hung in the room—No. 1,469, by Mr. C. J. Bathurst, is perhaps the best of them. The design mainly consists of heavy stone basement and ground stories, two upper floors in brick, and a green slated roof, very busy with two sets of dormers. The long vertical lines in the brick part of the front are quite satisfactory, while all the respective materials are intelligently handled. No. 1,468 is another front of a Town House, shown by a ¼ inch scale elevation. The materials are identical with the design just referred to, but the detail of the upper stories is too fussy. The main cornice has no returned ends, and would have a most abrupt appearance, while it is difficult to determine whether the windows are casements or double-hung sashes. No. 1,485, drawn and designed by Mr. R. F. Graham, is a neat sketch of a similar subject, but very much in the nature of what is generally found in the West End.

"Proposed Villa near Antwerp" (1,472) is quite modern English in character. The design, of which Mr. R. F. Atkinson is the author, is an effective arrangement in shadows and projections. A colonnaded verandah is placed on the ground floor, above which is a long bedroom story having two wooden bays and a large overhanging gable grouped at each end. The eaves also has a large projection and the effect of the angle view showing the gables springing from nothing is not successful. There is no plan. "Hall Place, Shackleford, Surrey" (1,494), is a pencil drawing illustrating certain extensions to an old house, the nature of which is conveyed by the small key plan. The architect, Mr. H. Tanner, junior, has introduced too many small parts in bays, nooks, and arcades, whilst the main additions, and, indeed, the house itself, are overpowered by a very large gable. Beyond the chimneys very little of the tradition of the existing work is followed.

FURTHER NOTES ON ROYAL ACADEMY PICTURES.

THIS is not a great portrait year, in that there is no such striking and brilliant portrait combination as Mr. Sargent has shown us on more than one occasion, as well as Millais in earlier days; but there are a considerable number of fine and more or less interesting portraits. Mr. Sargent's "Mrs. Wertheimer" (301) may be said to be the finest of the year; the broadest and most equable in style and in the treatment of face, costume, and accessories; few families have had so much artistic talent expended on their portraiture. In some of the most effective portraits of the year the face seems unfortunately to be the least successful element, and Mr. Sargent's large and grandiose portrait of "The Countess of Lathom" (175) comes into this category; the whole picture is dignified to a degree, perhaps even a little too pompous in style, but the face is rather hard and expressionless. His full-length portrait of "The Duchess of Sutherland" (206), standing in the shadow of a wood, in a brocade dress in which light green predominates, is a striking and effective colour composition, and in this case the head is worthy of the whole. Two of the more satisfactory portraits, in unity and breadth of style, are the two by Mr. Cope in Gallery I., the Archbishop of Canterbury and the Lord Chief Justice. In both of these the head, the costume, and the accessories are treated in a broad style of execution which seems to blend the whole together; the difference between this and the portrait painting which combines forcible treatment of costume with what one may call a wooden treatment of the head, may be appreciated by comparing Mr. Cope's Archbishop of Canterbury with the portrait on the same wall which forms the pendant to it in the hanging. Among the portraits which make no attempt at effect, but are simply good likenesses (the most important object, after all, in a portrait), Mr. Shannon's of Sir W. Emerson (119) is excellent; Mr. Bacon's of Mr. Spielmann (743) has the same merit, as also Mr. Collier's of Professor Ray Lankester, who is represented as lecturing at the conventional green table. Among the same class of portraits which aim at being simply likenesses, without studying special effects, are that of Mr. G. W. Palmer by Mr. Cope (366) and that of Mr. Mildmay by Mr. Ralph Peacock (846); in these two cases we cannot judge of the likeness, but both look as if they should be likenesses, and are good plain unpretending portraits, very well executed. Among those which aim at more dramatic effects, Mr. Furse has painted Mr. and Mrs. Oliver—he engaged very eagerly in salmon fishing, and the lady lying face down on the rocks overhanging the stream, watching the result. This is vigorous in action and excellent in colour; as to being painted in this kind of special occupation, that is a matter of personal taste; to our thinking a portrait should have more repose. Mr. Ouless's bust portrait of Earl Bathurst in peer's robes (347) is fine and forcible, both in expression and colour.

Landscape, apart from sea-painting (of which we have already mentioned the finest examples), is stronger this year than it usually is at the Academy. There are some things, no doubt, that would strike one more if one saw them for the first time; Mr. Peter Graham's rocks and sea for instance (56), and "The Edge of the Loch" (126); these are Mr. Graham's two pictures, and one has seen them both scores of times. Mr. Murray's landscapes seem more and more wanting in unity of composition; they are what we call ragged landscapes, with no predominating motive in them; and he is unwise to draw attention to the fact of painting scenes that Constable has painted, thereby suggesting comparisons. Mr. East is at his best this year. Of his three landscapes the most complete and satisfactory is "Morning at Montreuil, Pas de Calais" (336), with its grey dewy foreground and massed trees, and the morning sunshine seen beyond them. Mr. David Farquharson's "Full Moon and Spring Tide" (195) is a fine picture, more like moonlight than are many so-called moonlight

pictures; the breaking sea in the foreground is perhaps purposely kept a little vague and uncertain in order to give the effect of a sea half visible in the moonlight; it is a bold attempt at a very difficult effect, and if not entirely successful in a realistic sense, it is successful in the poetic sense. Mr. J. Farquharson's landscapes belong to the realistic order, and as such they are good, especially "Homewards" (469), a twilight snow scene with a lonely figure hurrying through it. His other snow scene (268), with a rather too yellow evening sky behind, is very real and very effective in its way, but it is successful imitation of nature rather than landscape-painting in the higher and more poetic sense. One of the finest landscapes is that by Mr. Aumonier which is cornered in Gallery XI. —"The Borderland" (858); not a picture to take the popular taste, but there is certain grandeur about it, and it is what landscape should be—a poetic rendering rather than a transcript of nature. Mr. Clausen's "Willow-trees at Sunset" (45) possibly goes a little too far in the direction of translation as opposed to imitation, but it is a very interesting and unusual work, full of artistic suggestion. Some other landscapes that are worth special note we may take in the order of hanging. Mr. Leader's "Sandy Shore on the South Coast" (14), in spite of its steely sea in the distance, is a really good study of sandhills, far more interesting than his regulation evening effect in Gallery III. (168), the kind of picture that is dear to the average visitor, and which is simply the repetition of a conventional effect that we have already had over and over again. Mr. Arnesby Brown has started on a new track in his little seaside picture, "The Bay, Twilight" (34); it has a little too much light for the effect intended (it is so difficult to paint the absence of light!), but it is a very pleasing and poetic little painting, and interesting as a new effort by an artist who has hitherto confined himself to one class of subject. Mr. Fred Hall's "Silver and Gold" (461) is a very clever picture of a special effect; silvery hoar frost on the foreground contrasted with the red morning sunlight reflected from the cliff behind; quite an original work. Mr. W. Ayrton's "Marsh Marigolds" (492) is a very bright bit of flat landscape with a wide sky above it; a picture that gives promise for what its author may do in the future. "Phosphorescence and Moonrise" (501), by Mr. Wehrschmidt, one does not quite know what to think of; it is a clever attempt to paint what it is very difficult to realise in pigments at all, and unless one had seen the thing in nature it is difficult to form a judgment of it; but it is not a work to be passed over. Mr. Parsons gives the title "Bonnie Scotland" (537) to a picture which is very different from what the title would lead one to expect, the main factor being a foreground heaped with bright flowers; a rather unusual corner of Scotland, one would say, but also an unusual picture, and one which has the merit of breaking this artist's rather too constant repetition of one effect in landscape. Under the title "A Sunny Shore" (575) Mr. Lionel Smythe paints the bright flat sands of Wimereux in the holiday season and diversified with holiday figures; a picture at once pleasant in itself and giving a true impression of the place. In Gallery IX., the room of the cabinet pictures, Mr. Albert Goodwin has a small and subtle painting of "Vesuvius in the Moonlight" (670); and Mr. Adrian Stokes a small landscape in which "The Blue Pool" (682) is contrasted with the golden splendour of sunlit trees; "a symphony in blue and gold" it might be called, and a very bright and vivid one; and Mr. Clausen exhibits in the same room what we think is his best picture of this year, "A Frosty March Morning" (756) in a turnip field, a remarkable bit of truthful representation arrived at by a broad method of painting—real without realism.

We will now note, in the order of hanging, some of those mostly smaller works, not comprised under the heads of either portraiture or landscape, which claim notice for their own merits or for the names of their authors. Mr. Tuke's predilection for the nude figure in air and sunlight, which has been the occasion of some of his best works, is only exemplified this year by the small picture, "In the Morning Sun" (38), a bright bit of painting of a single figure in the open air, but rather a study than a picture. Near this is Mr. Wetherbee's beautiful little pastoral, "Golden Silence" (49), one of his works in which figures and landscape go together in harmony; the figures here are of modern rural life. His idealised classic figures harmonise better with this kind of idea in painting; still, this is a beautiful little composition, surpassed however by that in the next room, "The Year's at the Spring" (88), where two or three girls in costume which belongs to no special time or place, followed by lambs, walk over a sunlit rising ground, the brightness of which is emphasised by the bit of dark blue distance beyond. This picture is quite a poem of springtime. Mr. Orchardson's small work "The Lyric" (89), a girl seated before one of the old pianofortes in upright harp form, the only thing he exhibits this year except portraits, shows the style of a master of this kind of subject, but is not otherwise of importance. Mr. Clausen's "In the Beanfield" (94) with its foreground figures and beautifully indicated distance, is pretty nearly a repetition of a former work, but pleasant to meet nevertheless. Mr. Lomax's "Hence to Mr. So-and-So, the poet's, where we heard the latest lampoon and had some excellent madeira" (147), is on a much smaller scale than any of his work that we remember before—a highly finished interior of the Queen Anne or late Jacobean period, which for the kind of thing is about as good as it could be in the accessories, and the characterisation of the figures. The artist seems to be taking to this miniature style; he has another in Gallery IX., "The Collector" (729), also very good. In the second room Miss Catherine Wood shows her accomplished hand in the painting of still life (149), and Mr. Swan's "The Young Bathers" (165) is an excellent example of his power in painting the nude figure on a small scale.

Mr. Watts's "Lilian" (179) in Gallery III. should indeed have been mentioned among the more important works of the year in our first article; it is a life-size three-quarter length of a young girl with a lovely expression, facing the spectator, and holding a quantity of bright flowers in the two hands dropped in front, which are an important element in the picture, the great interest of which is as a study of colour. Mr. Walter Donne's large painting, "Golden Dawn" (176), is a picture to be looked at, though it is a little too scenic in effect; the foreground is a small city with a bronze figure on a high terrace on the right; behind, the sea and high cliffs are bright in morning sun, the foreground being in shadow; the whole thing looks a little too "contrived"; still, it has an effect. Mr. Gow's "Farewell to Nelson" (211), who comes down the stairs to the man-of-war's boat at Portsmouth, is real enough of its kind, but the artist has done better things. Mr. Ralph Peacock, who a year or two back made a kind of *début* as a painter of child portraits, paints this year a lovely little naked infant, a kind of allegory of life, sitting among hills and turning up a surprised face; the title is "Out of Everywhere into Here" (228), and as a matter of beauty and expression it is certainly far superior to Mr. Watts's leathery-looking child in the New Gallery who asks the question, "Whence? Whither?" In Gallery III. is also M. Bouguereau's correct, cold, and dead religious painting, "Ora pro nobis" (217). One really wonders how any one can be such an accomplished master as M. Bouguereau in his own way is, and yet succeed only in producing pictures that no one can care for or be moved by. A matter-of-fact temperament, which treats poetic subjects without poetic feeling, may be one reason; an entire want of feeling for colour seems to be another. The provoking thing is that in a certain sense his works are so good, so completely those of a master of his craft; and yet—after seeing one we never want to see another. There is another large religious picture this year, by Mr. Abbey, "The Central Panel of a Reredos for the Church of the Holy Trinity, Paris" (361). This is frankly a decorative ecclesiastical picture; the figure of the crucified Christ in the centre, and the two Marys (we presume) one on each side, the whole on a gold background partly diversified with raised decoration. It is a kind of work with which we have no sympathy, and almost regret to find Mr. Abbey engaged in; but it has this difference from M. Bouguereau's picture, that it has beauty of colour, and that it gives the impression, at all events, of being painted with sincerity, while the French artist's treatment of his subject is purely academic.

In Gallery III. we are very glad to see an important work by Mr. Bacon, which looks as if this artist was now going to redeem the great promise which he gave in his first exhibited works; though this is a work of a very different class from those, it is thoroughly original, and shows great power of execution. It is called "A Voice" (207), and represents a garden *fête* one knows not where—perhaps in Germany in the eighteenth century, where various figures scattered about, some military, are supposed all to be listening to the "voice" of a lady singer in centre of the scene. The figure of the singer, in full light, and painted with great force, though only in the middle distance, seems to dominate the scene just as her voice is supposed to do; there is a great deal of curious and elaborate detail in the picture, all of which will bear looking into; it is not a work that would be generally attractive—its point is not immediately obvious, but it is a picture of quite exceptional talent. Mr. Bacon has another very clever picture, an interior with three figures of the Jane Austen period (489); the two ladies might almost pass for Miss Tilney and Catherine Morland. If Mr. Bacon, with this kind of talent to draw upon, would only take to illustrating Jane Austen, he might find a wide and nearly new field before him.

Mr. Nowell's "Isabella and the Pot of Basil" (292) is a good painting in itself, but the long-necked lady in the crimson dress who kneels before the flower-pot is not Keats's heroine, "poor, simple Isabel"; she is too mature both in age and expression, and as an illustration of the well-worn subject it is a failure. Mrs. Normand's "Songs of the Morning" (391), a life size nude or nearly nude nymph crowned with flowers and singing, is exceedingly graceful and pretty, but in colour something too luscious, and the tones of the green in the foreground foliage are not comfortable. In "A Winter Day in Norway" (394) Mr. Thaulow repeats with his usual success an effect which he has made his own. Mr. Melton Fisher's "My Lady's Toilet" (401) is an interior with two figures, very fine in colour if rather pointless otherwise. Mr. Herbert Dicksee's "The Destroyers" (404) are good solid well-painted tigers. Mr. Goodwin has painted a half symbolical picture, "The Invincible Armada" (410); the wrecks of some of the Spanish ships on a flat shore with a red (rather too red) sunset in the rear. We can hardly think it one of the artist's successes; and the theme is a rather hackneyed one. Mr. Logsdail's "Death and the Woodcutter" (414), a rather new line of subject for him, is a very clever work with a grim humour in it. Mr. H. W. B. Davis's "Mares of the Boulonnais" (420), foreground animals and distant coastline, is the best of his works this year. Mr. Walter West's "A Long Story" (430) is an admirable example of his faculty of making a fine picture out of an interior and rich costumes; the young lady in the foreground is a charming figure too. If Mr. West could only put a little more subject into his pictures he would go farther; as it is, they are simply *choses vues*, symphonies of colour and texture, but that kind of thing will not retain the same interest permanently. Mr. Byam Shaw's "Now is the Pilgrim year fair Autumn's charge" (441) has on the other hand almost too much of meaning; the figures are all symbols, and one does not know whether to regard it for the composition or for the meaning. It is a seriously intended work, but rather heavy in style, and can hardly be called a success. Near this is one of those moral lesson pictures of which there are one or two every year; the old story of "The Gambler's Victim" (457)—the packs of cards, the early morning light, the fleeced and repentant youth, etc. Painters must be hard up for subjects when they take to this kind of twaddle, though it has one recommendation, no doubt—it is a kind of picture the Academy crowd can understand.

Gallery IX. contains a beautifully drawn little nymph by the President, "The Sea-Cave" (586). Among other things in this room we notice two slightly painted works which nevertheless give some promise of a new painter of ships and sea—"A Fair Breeze" and "The End of the Voyage" (612, 636); they are small and rather sketchy pictures, by Mr. Frank Kelsey, but his ships sail well. In Gallery X. is a good little architectural picture by Mr. Fred Hall, "An Old Waterway" (797), a night scene on a canal in an ancient city, and Mr. Charles Sims's bright and breezy picture "Butterflies" (807), which are chased by a girl and small boy across an open down. Gallery XI. has also its architectural picture, a more important one, "St. Paul's Cathedral" (834) seen from the river, by Mr. W. L. Wyllie; and for once we get a painter's St. Paul's with the

dome drawn in perspective. The dome is, however, a little too high in proportion and with too pointed an outline, but it is a much better architectural representation of St. Paul's than one generally sees in a picture exhibition. Mr. Wardle's "Fate" (840), a leopard with its forepaws on a bird, and with a kind of humorous or mischievous expression which is really to be seen in wild animals sometimes when they have caught their prey, is a very clever animal painting, though whether it was a picture to purchase with the Chantrey fund is a question. Mr. Dollman's "Famine" (847), symbolised by a gaunt draped figure in the middle of a desert, over which stream hordes of wolves, is a powerful and impressive picture. The catalogue of the oil paintings concludes with a decorative design for a frieze, by Mr. Ernest Normand, from "Lancelot and Elaine"—the boat with the dead girl and the dumb rower passing along the stream; a subject which lends itself well to the long horizontal composition required for a frieze.

LETTER FROM PARIS.

On Saturday last the Société des Artistes Français (Old Salon) proceeded to vote for the awards of the medals of honour to exhibitors in the sections of painting, sculpture, architecture, and engraving. In painting, owing to the indecisive character of the voting, the medal was not awarded. M. Henri Martin obtained the highest number of votes, 146 out of 355 voting, and M. Toudouze came second with 88 votes, but neither of these formed a sufficient proportion to justify the award of the medal. In sculpture, M. Just Becquet, a very old exhibitor, obtained the much-coveted distinction. His "Joseph en Egypte," a very beautiful work which we had not space to mention in our review of the Salon, had already been purchased by the Government. M. Becquet was a pupil of Rude, whose sculptural traditions he preserved, and the choice is thought to be a very fitting though rather tardy recognition of an artist who has produced many admirable works, a considerable proportion of which are to be found in various art-museums in France. The Luxembourg possesses two, "Ishmael" and "St. Sebastian"; and his "Fawn and Panther" is in the museum at Tours. He executed a statue of La Bruyère for the Hôtel de Ville, and one of Victor Cousin for the Ecole Normale; and his "Vendangeur" decorates the garden of the Tuileries. He had recently executed for the Bibliothèque Nationale a statue symbolising "La Numismatique." M. Becquet had received ordinary medals in the salons of 1867, 1870, 1877, 1878, and 1889, and a gold medal in the great exhibition of 1900. In architecture the medal has naturally been awarded to M. Patouillard for his splendid series of drawings and restorations of the Tiber Island, described at some length in our article on "Architecture at the Paris Salon" (May 14); M. Patouillard had, in fact, practically no competitor for the medal. M. René Patouillard is a pupil of M. Ginain; he obtained the Prix de Rome in Architecture in 1895, and a medal of the second class in 1900. The medal for engraving was awarded to M. Muller, who was a pupil of Boilvin and Lalouze.

M. Guillaume, the Director of the French School at Rome, is now very old, and there is talk at the Académie des Beaux-Arts of his retirement in favour of a new appointment. M. Bouguereau, whose name has been mentioned, is also objected to on the score of age; M. Detaille, also spoken of, seems to be unwilling to accept a post which, though honourable and important, involves banishment from Paris; and several artists think that architects ought to have their turn. In that case, M. Pascal or M. Nénot would probably have the best chance; the latter more particularly, since he is an energetic and still a young man, and has shown distinguished ability in the carrying out of the great building for the new Sorbonne.

The Petit Palais has received a new collection offered by M. Hœutschel, consisting of the works of the sculptor Jean Carriès, who died a few years ago in the midst of his artistic career. The collection includes busts, groups in the round, bas-reliefs, and some curious ceramic work, and will occupy a gallery next to that of the Dutuit collection, which has also been enlarged by the addition of about a hundred pieces of Italian faïence presented by Mme. Dutuit. In the same building, in the ground floor galleries, there will also be exhibited shortly the numerous objects discovered by M. Gayet in the excavations at Antinoé. These excavations have been carried out at the cost of the Société Française Archéologique, recently founded, and which desires to take the position now taken by similar societies in other countries. Up to the present time the French Government has had the sole charge of all scientific missions, but the funds at its disposal for such purposes are necessarily limited, and it is hoped that the establishment of the Societé Archéologique will give an important impulse to French archæological undertakings.

Among the architectural work in hand or recently executed on public monuments must be specially noticed the completion by M. Redon of the interior of the Pavillon Marsan at the Louvre, which has been going on for some months past. The old staircase built by Lefuel has disappeared, and on its former site there has been introduced, on the first floor level, a gallery of splendid proportions, reached by two side staircases. This lofty gallery has two balconies in carved stone, at the second floor level. It is lighted by glass panels in the ceiling, and gives access to two other large square galleries opening out of it, and which are arranged so as to afford an interior vista from the existing galleries of the Musée des Arts Decoratifs to the Rue des Tuileries, forming a fine effect as well as an important practical addition to the museum.

At the Gobelins they are working on a great series of tapestries in the style of the XVIIIth century, designed by M. Albert Maignan and intended for the Luxembourg Museum. The first of the series, "Apollo and Daphne," is finished, the second, "Venus Weeping for the Death of Adonis," is in process of manufacture. The whole series, to consist of eight pieces, will take four or five years to complete.

Among the smaller exhibitions is that of the pictures and studies of J. Jacques Rousseau, the result of a tour in the neighbourhood of Anam and Tonkin, and which includes many striking and effective views of the ancient architecture of the country. Another interesting exhibition, which however has just closed, has been that of the works of the late painter Romain Cazes, who was the favourite pupil and disciple of Ingres, and reproduced faithfully his master's learned but cold and academic style.

The competition in "Balcons Fleuris," organised by the "Société du Nouveau Paris," for the most effective arrangement of balcony flower gardens, is now over, and the jury have awarded a sufficient number of prizes. The idea was a happy one, but for the future, if this method of decorating the Paris streets is to have the best practical result, the architects ought to bring their co-operation. The façades of new houses would have to be designed with some reference to this flower-decoration scheme, with projections which would afford supports for an arrangement of flowers in harmony with the lines of the architecture. The first competition may have its results, however, especially if it leads to the horticulturists and the architects putting their heads together to produce the best effect. The idea may very likely become popular; in the present competition the jury, presided over by M. Frantz Jourdain, had to consider and pronounce upon no less than two hundred rival schemes.

The death is announced, at the age of 77, of M. Tabrich, a sculptor who has always been a member of the Société des Artistes Français, though he never exhibited there, having devoted himself to a special class of work—viz., the production of anatomical models in wax, which he modelled and coloured with extraordinary truthfulness, and for which he obtained a legitimate reputation. If the highest object of art were the imitation of nature, M. Tabrich might have been said to have surpassed every one else in the realistic perfection of the models which he made for the Faculté de Médicine of Paris.

The death is also announced, at the age of 55, of M. Lucien Sergent, the painter of battle scenes, and who exhibited this year at the Salon two pictures, one representing Ney charging at the head of French cuirassiers at Waterloo*, the other entitled "La Surprise."

*This was mentioned in our review of "French Painting and Sculpture of the Year" (May 21). We hear with great regret of the death of this talented artist, who rather stood alone among French military painters. He did not produce large and popular canvases, but his small works showed remarkable originality of conception and a power of realising the facts of a scene in which he was hardly equalled by any other battle-painter of the day. In a former year, the writer of this note drew attention, in the *Fortnightly Review*, to Sergent's remarkable picture of Napoléon, as a young commander at the battle of Marengo, sitting on a bank at the roadside waiting for his reserves to come up—"Attendant sa Réserve" was the title. It was one of the most real and living pictures we ever saw as an illustration of Napoléon's career.—Ed.

M. Sergent was a pupil of Pils and of M. Jean Paul Laurens.

The death is also announced, at the age of 85, of M. Joseph Verdier, the landscape-painter, who was a pupil of Rosa Bonheur, and was President of the "Société des Amis des Arts" of Loir-et-Cher. Several of his works are in the Art Museum at Blois.

THERMIT WELDING.

The new process of welding which is now coming into use in this country—at present chiefly in connexion with tramway rails—is the invention of Dr. Hans Goldschmidt, and is based on the intense heat developed by the combustion of aluminium. The term "thermit"—literally translated, "with heat"—is the name applied by the inventor to a mixture of aluminium and oxide of iron in a granular state, and in chemical proportion. This mixture cannot be ignited by ordinary means. It may be stirred by a red-hot bar of iron, or thrown into a fire, or molten cast-iron may be poured on it without causing ignition. But if even a small portion of the mixture be raised to a temperature nearly approaching that of molten steel the chemical affinity of the aluminium for the oxygen contained in the ferric oxide is powerfully developed, with the result that metallic iron and oxide of aluminium are produced, the conversion being attended with intense heat. The temperature so attained, being at about 3,000 deg. C, makes perfectly easy the performance of operations that previously were only possible by the aid of the electric furnace, and still others to which the electric furnace cannot be conveniently applied.

Although the enormous temperature developed by the combustion of aluminium in oxygen, or when mixed with any substance containing oxygen has long been known by chemists, scarcely any attempt was made to utilise the heat so generated until Dr. Goldschmidt's process was introduced. It is true that in 1894 Claude Vautin patented a very similar process, and that Robert Diessler, in Germany, employed the heat resulting from the reaction as a means for heating up metal, but in neither case was the idea developed on commercial lines.

Dr. Goldschmidt, however, has evinced considerable activity in the evolution of auxiliary inventions having for their object the utilisation of the heat of the chemical reaction, or of the product of the reaction, or of both. To illustrate the practical utility of these supplementary inventions, we may point out that thermit can now be used for the following, among other purposes:—

(1) In iron and steel casting, for the prevention of blowholes and cracks, for eliminating impurities and rendering the metal more fluid. It is also easy to produce small mild steel or weld-iron castings most expeditiously by the aid of thermit.

(2) In making steel ingots, for the prevention of "piping," thus making it possible to fill the moulds nearly to the neck with steel of uniform density.

(3) In repairing iron castings, by running on new metal to replace that broken off, or by welding on new parts.

(4) In jointing pipes, by joining up separate lengths to form a continuous pipe line.

(5) In jointing rolled sections, by welding the ends together. Beams, angle, tee, and channel bars, rails, and all other rolled sections can be treated in this way.

Before discussing such of the foregoing applications of thermit, as are more especially connected with structural practice, we will briefly describe the manner in which the mixture is treated as a preliminary to its practical employment.

In the first place a sufficient quantity of thermit is placed in a small crucible, and is fired by means of special ignition powder ignited by an ordinary fusee. The reaction described above then takes place, and the contents of the crucible are resolved into two layers, the upper consisting of aluminium oxide and the lower of iron. The latter product may vary from the state of pure iron to that of mild steel, according to the proportion of carbon present, and it may, of course, be an alloy of iron or steel with manganese, nickel, and other

metals, if such be present in the original ingredients of the thermit mixture.

The crucible may be emptied in two different ways—either by pouring from the top, in which case the slag flows first, or by drawing through a hole in the bottom of the crucible, when the iron flows first and is followed by the slag.

In deciding which of these methods shall be followed, it is necessary to consider the purpose for which the material is to be applied. When the slag is poured first, it forms a layer upon the object, thus protecting it in a measure from the molten iron which follows. Hence the iron can be applied to hollow forms of manufactured iron without burning them through. Hence for making welded joints to connect iron or steel pipes this mode of pouring is the most suitable. It is equally well adapted for making butt joints between angle and other rolled bars of small dimensions. The process of welding is very simple, all that is necessary being to clean the surfaces, to place a mould around the parts, and to pour into it the contents of the crucible. Welds so made are of equal strength with the remainder of the metal.

When the thermit iron is drawn from the bottom of the crucible it flows at so high a temperature as to melt the surface of the metal with which it comes in contact and to amalgamate with it, so as to form a homogeneous mass. This method is the best for welding tramway rails and for repairing faulty or broken castings, as well as for various other purposes of similar character.

In some cases, however, thermit can be used without the aid of a crucible. For instance, a boss can be cast upon an iron casting by forming a mould in the required place, and then, having poured a thin layer of molten iron upon the surface, thermit is added and ignited. Sufficient cast-iron or steel is then poured into the mould to form the boss. In this way cast-iron can be joined to steel or steel to cast-iron.

As mentioned at the commencement of this article, the use of thermit in this country has been chiefly exemplified in the welding of tramway rails. Such joints are now being regularly made by the Leeds Corporation, and during the last summer meeting of the Institution of Mechanical Engineers we had an opportunity of obtaining full particulars of the process as adopted in Leeds. From tests made by the Corporation engineers, it is evident that thermit joints are far stiffer than those made in the usual manner, and that electrical conductivity is better than that of the unjointed rail. It must also be evident that considerable injury to the rolling stock, as well as to the nervous systems of passengers, must be avoided by the smooth running of vehicles over the continuously jointed rails, for the persistent hammering and jolting due to incompletely connected rail ends are entirely obviated.

From the foregoing outline, it should be evident that the possibilities of thermit welding are very great. We commend the process to the serious consideration of our readers, feeling sure that they will be able to find for it many useful applications in connexion with structural and kindred work.

TAVISTOCK-ROW AND RECENT CHANGES IN COVENT GARDEN.

THE new buildings which have just been erected for the Duke of Bedford after designs by Messrs. Lander, Bedells, and Crompton, in the later English Renaissance manner, for the foreign flower traffic, stand upon the site of Tavistock-row. The Row, consisting of fourteen houses, was erected after the demolition in 1704 of Bedford, or Russell, House, the town mansion of William, first Duke of Bedford, to whom King Charles II. granted a charter of right in freehold to establish a fruit and vegetable market within the area which had been a pleasaunce and herbarium, the Frère Pye Garden, of the monks of Westminster. On that side of the convent garden lay the north wall, having two bastions, of the gardens of Bedford House (Southampton-street). The Duke's gardens extended from the east end of Maiden-lane to his stables, from which they were separated by a passage—since Tavistock-court—between the new buildings we mention and the market-house, which was built nearly twenty years ago on the site of the stables and of Nos. 1-3, Tavistock-row. Tavistock-street has supplanted the carriage-way leading from the courtyard of the house to the stables, which had two gates at the elbow of Charles (since Wellington) and York streets and in Exeter-street. Tavistock-row was pulled down in 1885; in December of that year was standing the last remaining house, No. 13, where had lodged Zincke, the famous enameller and miniature painter, Nathaniel Dance, and Dr. Wolcott, who there, in a garret, began his literary career as "Peter Pindar." At No. 4, at the north-west corner of Tavistock-court, illustrated in the *Builder* of April 15, 1876, Charles Macklin, the veteran of the stage, passed the closing years of his life. In the adjoining house, No. 5, lived and died (1707) William Vandevelde the younger and Thomas Major, engraver to the Court and the Stamp Office, who in 1784 furnished in less than twenty hours a perfect substitute in brass of the Great Seal stolen from Lord Chancellor Thurlow's house in Great Ormond-street. The north side of Tavistock-street was pulled down in 1887.

In the south-east corner of the square, and opposite Tavistock-row, stood Tom King's coffee-house, which Hogarth, in his print—the view is reversed—of "Morning," depicts as in front of the portico of St. Paul's Church, and its equally notorious compeer, Mrs. Butler's "Finish," also the new "Hummums," pulled down in January, 1886, for the flower-market house, and the place where Powell exhibited his puppet-show of "Punchinello," mentioned by Steele in No. 14 of the *Spectator*, March 16, 1711. A good view of the Row is drawn in Canale's large picture, painted in or about 1750, of the market, which was sold at Christie's auction-rooms on July 7, 1888; it shows the red-brick houses before their fronts were covered with stucco and otherwise modernised, and before the balustrade was added in front of the attics on the fifth story.

THE SURVEYORS' INSTITUTION:

MEETING IN NEWCASTLE-ON-TYNE.

A COUNTRY meeting of the Surveyors' Institution was held in Newcastle last week, the members being welcomed on their arrival by the local committee at the County Hotel, which were the headquarters of the Institution during the visit. The Mayor and Corporation granted the use of the Council Chamber for the reception, and the North of England Institute of Mining and Mechanical Engineers the use of their Lecture Theatre in Neville-street for the subsequent meetings. On the 26th ult. there was a municipal welcome in the Council Chamber; and afterwards the members adjourned to the lecture theatre of the North of England Institute of Mining and Mechanical Engineers, where the President, Mr. A. Buck, took the chair. The remainder of the morning was devoted to the reading and discussion of papers.

The President said he regretted the absence of the Secretary (Mr. Julian C. Rogers) in consequence of an accident.

Mr. Richard Welford, M.A., delivered a lecture on old Newcastle. On the motion of Mr. H. T. Steward (President-elect), seconded by Mr. J. M. Clark (Haltwhistle), Mr. Welford was heartily thanked for his paper.

Re-housing.

Mr. Edgar J. Harper, professional Associate, contributed a paper on "The Re-housing of Displaced Populations." He referred to the law affecting the provision of accommodation for displaced persons of the working class, and said that Parliament had now declared that all displacements must be accompanied by the provision of new accommodation, and had indicated the suburbs rather than the busy centres as the proper locality for such accommodation. A great deal, however, still remained to be done in the direction of securing adequate provision for working class populations compulsorily displaced.

"In the session of 1902 a Joint Select Committee was appointed by both Houses of Parliament to consider and report whether any amendments should be made in the Standing Orders and Model Clauses relating to displacements of persons of the labouring classes, and especially whether any and what provision should be made for re-housing *all such persons*, if displaced. That Committee reported in favour of abolishing the limit of twenty houses in a parish and substituting one of thirty persons in a borough, urban district, or rural parish. They recommended that the new houses should not be too ambitious in character and design, and that the location of such houses should be left wholly to the discretion of the Government department concerned. It is clear, moreover, that they contemplated the erection of buildings some distance away from the area of clearance. They further recommend that the Government department should be empowered to *fix rents* for new houses thus provided, and that an amended model clause should be embodied in an Act of Parliament. The result was the passing of the Housing of the Working Classes Act, 1903, which adopted the substitution of thirty persons for twenty houses as the limit above which provision must be made for re-housing, and embodied a model clause as a schedule to the Act. The suggestion that the Government should fix the rents of dwellings was not adopted. Further amendments contained in the Act are:—

"(1) The extension of the maximum period for which money may be borrowed by a local authority for housing purposes from sixty to eighty years.

"(2) The Government department is empowered to take into consideration the displacement of persons of the working classes from a scheduled area within five years previous to its acquisition.

"[This is necessary in order to prevent arrangements whereby owners might be induced to get rid of their tenants and enable promoters to escape the re-housing obligation by selling to them with vacant possession.]

"(3) The Government department may also require that all or some of the new dwellings shall be fit for occupation before the displacement takes place.

"By far the most important of these reforms are the discretion of the Government department as to the locality of the re-housing and the abolition of the twenty houses limit. It may be broadly stated that Parliament has now declared that all displacements must be accompanied by the provision of new accommodation; and has indicated the suburbs rather than the busy centres as the proper locality for such accommodation. The beneficial effect of these two changes can hardly be over-estimated. In any important town in the kingdom displacements usually occur in the central and fully built-up districts. The compulsion to devote the cleared sites to the erection of dwellings often involved considerable pecuniary sacrifice. Land thus situated is much more valuable for commercial purposes than for housing; and the difference between its commercial value and its housing value had to be written off as a dead loss before the provision of new dwellings could be commenced. In one case in London this loss amounted to over 200*l.* her head of the persons to be accommodated on the site.

"This enormous sacrifice had to be made apparently without purpose, and certainly without securing any desirable object. Insanitary areas are cleared as a general rule because they are condemned by competent persons as unfit for residential purposes; and therefore, so far as the public health is concerned, the erection of dwellings on these areas is obviously undesirable. And if the intention was to accommodate the actual individuals who were displaced, it is now notorious that—but for a few exceptional cases—the idea proved a complete failure. But perhaps the worst result of the old policy was the serious obstacle it placed in the way of the material progress of the community by diverting land from its most profitable use and tying it up for another purpose, for which the march of events was year by year tending to make it less suitable.

"The twenty-house limit was liable to serious abuse. It was obviously possible to obtain statutory authority to displace a large population, without incurring any obligation, by limiting the number of houses scheduled in any one parish to nineteen; and, apart from profit-earning companies, it may be mentioned that a public body (now no longer in existence) succumbed to the temptation on one occasion. It will be noticed, too, that the new limit of thirty persons does not apply, as formerly, to a single parish, except in the rural districts; and a railway company which proposes to displace thirty persons in any part of the county of London, or in any borough or urban district, comes at once under the re-housing obligation. . . .

"A very great deal remains to be done in the direction of securing adequate provision for

working class populations compulsorily displaced. Except Part III. of the Act of 1890, as extended by the Act of 1900, there is still no means of securing adequate housing accommodation in lieu of displacements by closing orders and by private enterprise, and this appears to be one of the strongest arguments in favour of municipal action in the direction of providing such accommodation.

"This is a matter affecting the health and moral character of the most numerous class in the population. Private enterprise is after all a matter of supply and demand, and if it is more profitable to build houses for the middle and upper classes, the housing provision for the proletariat may, and often does, come short. Thus we find thousands of poor families living in houses never intended for such use, and unprovided with adequate sanitary arrangements. In such a case it is difficult to see what satisfactory argument can be advanced against the conclusion that the necessary provision should be made by a public authority.

"In this connexion it may be useful to point out that a public authority is at least better fitted to provide housing accommodation than, let us say, a railway company. The chief aims of a railway company are to provide means of transit for the public, and—if possible—to earn dividends for its shareholders. It possesses no experience of the housing problem, no machinery for grappling with it. Yet Parliament decrees that it shall bear the responsibility of providing accommodation for persons displaced, often delaying its railway operations in the process. Some provision whereby the re housing obligation could be transferred to a public authority—of course coupled with adequate pecuniary arrangements—would probably prove beneficial to all parties concerned. . . ."

Mr. Henry J. Potter, A.R.I.B.A., also read a paper on "The Housing of the Working Classes." He referred to the schemes for the laying out of estates for the erection of small houses, especially where the owner was the builder, and pleaded that it was not always necessary, by reducing the frontage allowed for each house, to squeeze as many houses as possible in a given area. The increased frontage, he said, and the consequent removal of the compartments forming the outbuildings, to a position under the main roof immensely improved the aspect from the back windows, permitted of a better circulation of air, and in certain aspects allowed the sun to penetrate a window where a shadow would otherwise have fallen. It provided also a means of contending against the difficulty of providing a sunny aspect for all living rooms, and that he feared was frequently shirked by architects.

Mr. W. Woodward said, on the question whether municipal bodies should undertake the building of dwellings for working people, he thought himself that, if the Building Acts were not so stringent, private enterprise would provide equal accommodation at a much lower rent than was possible under municipal control. The municipalities employed men who did not carry out their part of the bargain; and the great cost of dwellings for the working classes when the work was undertaken by municipal authorities, and the inability to provide rooms at a small rent, were consequent on the organised idleness of the very workmen who were proposing to occupy those dwellings.

Mr. J. W. Taylor, commenting upon the papers, and especially Mr. Potter's, said the plans sketched by the reader of the paper would not on any account be allowed in Newcastle by the local authority. The custom there was to have a back street, varying in width from 12 to 24 ft. The back street was for the passage of carts, for drainage and sewers; and the houses were usually two-story flats or tenements. The frontage varied from 19 to 22 ft. These houses were decent and sanitary, and were a good investment, paying as much as 6 per cent. if they were bought when the market was not inflated. These and the tramway system were solving the housing problem. They urged that workmen should become the owners of their own houses, because it gave them a larger stake in the country. The back to back house was insanitary.

Mr. A. M. Fowler (Manchester) denied that the back to back house was insanitary. The modern back-to-back dwelling was very different from the old rookeries that had been cleared away. There was not a town in England or in Europe that was built up like Leeds. Nor was there a town where the workmen were of such moral character. The Imperial Building Society turned over five millions a year in providing working men with their own dwellings. The working men owned their own dwellings, and paid only four shillings a week, whereas they would have to pay a landlord four shillings and threepence. He suggested that municipalities should assist working men to buy their own houses, and thus to become better citizens. They would never solve the housing problem until they made the workman feel that he belonged to the soil. He would have a bath in every house.

The President referred to the building of dwellings for agricultural labourers, in which he was concerned. It was necessary to provide houses of which the rent was a certain proportion of the wages earned by the workman. Thus it was a very difficult problem to build cottages which would not be a loss. There was no doubt that many labourers had left the country and come into the towns because their dwellings got into a bad state; and, if homes were made pleasant, they would not leave them.

Mr. J. Smith Hill, B.A., B.Sc., London (Associate), contributed a paper on "Agriculture in Cumberland."

A vote of thanks to the authors of the papers was heartily given.

Ancient Lights.

Mr. H. T. Steward expressed his regret that they could not have a paper on ancient lights—a question in which many of them had taken a deep interest. The House of Lords' decision had told them what the law was in the matter; and he could not help thinking it would be a great benefit to Newcastle, and to them in London and elsewhere. The Surveyors' Institution, in conjunction with the Royal Institute of British Architects, had been for some time engaged in framing a Bill which they had presented to Parliament this year. What was the exact position of the Bill, in the congested state of Parliament, he could not say; but he did not think there was much chance for it this year. They wanted to express in the Bill that the decision of the House of Lords was the law on the question.

The conference then adjourned.

The afternoon was devoted to visits to places of interest in the neighbourhood.

The members dined together in the evening in the County Hotel, Newcastle. Mr. Albert Buck (President) was in the chair, and was supported on the right by the Right Hon. Lord Armstrong, Mr. Herbert T. Steward (President-elect), the Sheriff of Newcastle (Mr. W. Cowell), Mr. G. Langridge, Mr. Howard Martin, the Rev. Principal Gurney, Mr. Edward Woolley, Mr. C. E. Carr, Mr. F. J. Edge (City Engineer), Mr. Tom Birkett, Mr. F. H. Holford (City Surveyor); and on the left by the Deputy Mayor (Ald. Jno. Goolden), the Hon. E. G. Strutt, Mr. Geo. Renwick, M.P., Mr. C. Bidwell, Sir Jacob Wilson, Mr. R. Horsfall, Ald. L. H. Armour (representing the Mayor of Gateshead), Mr. H. Chatfeild Clarke, Mr. James Walker (engineer to the River Tyne Commissioners), Ald. T. S. Carrick, Mr. G. M. Freeman, K.C., Mr. J. M. Clark, Mr. J. D. Walker (Under Sheriff), Mr. Henry Fowler, and Professor Gilchrist, of the Agricultural department of the Armstrong College.

The loyal toasts, proposed by the President, were cordially honoured, and Sir Jacob Wilson proposed "The Houses of Parliament."

Lord Armstrong and Mr. Geo. Renwick, M.P., responded.

Mr. Herbert T. Steward proposed "The Mayor and Corporation of Newcastle-on-Tyne," and expressed the appreciation of the Institution for the cordial welcome that had been extended to them that morning.

Ald. John Goolden (Deputy Mayor) having responded, Mr. Geo. Renwick, M.P., proposed "The Surveyors' Institution." He noticed that they had been discussing the housing of the displaced population, the housing of the working classes, and kindred questions. He knew they were interested in the question of small holdings, leasehold enfranchisement, and the valuation question. These were all important questions, and they might discuss them with profit. But the majority of the Members of Parliament knew very little about them. He referred to the Bill of Sir John Rolleston for the protection of incorporated chartered societies. That might seem a Bill which was harmless, and which they could all support; but he had letters from his constituents asking him to oppose it. So they saw there were two sides to every question.

The President replied. He said they had visited many towns, but they had never, in any one of them, received a more cordial welcome than they had received in Newcastle. They got great good from those visits, and he hoped they left some good behind them.

The toasts of "The Provincial Committees" and "The Guests" followed.

The following day was devoted to excursions.

Annual General Meeting.

The annual general meeting of the Institution was held on Monday at No. 12, Great George-street, Westminster, Mr. A. Buck, President, in the chair.

Mr. Percivall Currey, Hon. Secretary, read, in the absence of the Secretary, Mr. Julian C. Rogers, the scrutineers' report on the election of President and Council for the ensuing year of office. The new President is Mr. H. T. Steward, and the Vice-Presidents are Messrs. C. Bidwell, G. Langridge, T. T. Wainwright, and J. C. Penfold, late Hon. Secretary.

Mr. Currey also read the thirty-sixth annual report of Council and the statement of receipts and expenditure. The report shows that the present membership of the Institution is 3,560, which is an increase of 117 during the past year. The receipts for the year show, both on capital and income account, a satisfactory increase—the former of 83*l*., and the latter of nearly 500*l*. The item hire of rooms for arbitrations shows a total of 648*l*., being 30*l*. more than last year. The income from interest and dividends for the year amounted to 434*l*., as compared with 373*l*. last year, but the shrinkage in the value of the invested capital, owing to the general depression in securities, has necessitated the writing off, for the purposes of valuation, of about 650*l*. on capital account. Expenditure shows an increase of some 380*l*., including a payment of nearly 500*l*. for the cleaning and decorating of the principal rooms. There has been again a large increase in the numbers of candidates for the professional examinations, the entries and passes as regards the preliminary examination being practically the same as last year. Of the 480 candidates who presented themselves for the professional examinations, thirty-nine came up for re-examination in the "typical" subject, only one being in the Land Agency Sub-division, seventeen in the Valuation, and twenty-one in the Building and Quantity Surveyors Sub-division. Of these candidates, thirty completed their qualifying examinations by obtaining pass marks in their respective subjects. Among the 441 new candidates who presented themselves this year thirty-three failed to pass in their "typical" subject, although obtaining a sufficient aggregate of marks in the examination as a whole, and were "referred back" for re-examination in that subject. Six of these were in the Land Agency, ten in the Valuation, and seventeen in the Building Sub-division. At the examinations held in Glasgow simultaneously with the English examinations, under the superintendence of Mr. William Fraser and a Committee of Scottish Examiners, five candidates presented themselves in the Land Agency Sub-division and one in the Valuation Sub-division. Of these, five passed. For the Professional Examinations in Dublin, three Land Agency candidates for the Associateship presented themselves, and one Building candidate for the Fellowship, two candidates in the Associateship Division being successful in passing.

The prizes were awarded as follows:—The "Institution" Prize, value 15 guineas, to William Cecil Clemens, a Student Candidate in Sub-division III. (Building), with 795 marks out of 1,000. The "Special" Prize, value 10 guineas, to Charles Frederick Norman, a Student Candidate in Sub-division II. (Valuation), with 785 marks out of 1,000. The "Penfold Gold Medal" to Charles Edwin Widdicombe, a Fellowship Candidate in Sub-division II. (Valuation), with 821 marks out of 1,000. The "Penfold Silver Medal," for the highest proportion of marks in the two sections of the Associateship Examination, and the "Driver" Prize, value 15*l*., to Gustavus Taylor Loban, a Non-Student Candidate in Sub-division II. (Valuation), with 841 marks out of 1,000. The "Beadle" Prize to Harold Robert Smith, a Non-Student Candidate in Sub-division I. (Land Agency), with 70 per cent. of the maximum marks in the subject "Agriculture." The "Crawter" Prize to Frank George Newnham, Fellowship Candidate in Sub-division II. (Valuations), for the best work in the subject "Principles and Practice of Valuation."

In last year's report the Council announced a gift by Mr. F. T. Galsworthy of 500*l*. for the endowment of a prize in connexion with the Fellowship Examination, in a form not then determined. It has now been decided, with Mr. Galsworthy's consent, to devote each year's interest to a prize in respect of that year, to be awarded to the Fellowship Candidate who, having passed the Associateship Examination while a student, is found to have obtained the highest number of marks in his Associateship and Fellowship Examinations combined. The amount of the prize is to be devoted (until exhausted) towards the payment of the winner's annual subscriptions, or, under special circumstances, and at his request, partly towards that object, and partly to the purchase of books or scientific instruments. This prize was this year awarded to George Potter Knowles who passed the Associateship Examination as a Student Candidate in 1899, and whose aggregate of marks at that examination and at the Fellowship Examination, 1904, amounted to 1,586, or 79 per cent, of the possible maximum marks in the two examinations. The "Preliminary" Prize was awarded to Sidney Harold Stohwasser, who passed at the head of the list in the Preliminary Examination in January.

"The work of the examiners has been increased this year. The revision of the syllabus and rules of examination has introduced new subjects, and the further division of Subdivision III. into the two branches of Building Surveyors and Quantity Surveyors, each branch having its own special 'typical subject,' also added considerably to the number of papers to be set, and to the amount of work to be adjudicated upon. The resulting addition to the labours of the Honorary Examiners has been very great, and they have again earned the hearty thanks of all who have the interests of professional education at heart.

The Council also desire to express their obligations to the Members of the Local Committees in Glasgow, Dublin, and Manchester, who conducted the Preliminary and Professional Examinations with such careful attention to detail and generous expenditure of time as to ensure their complete success."

An application has been received by the Council from the Senatus of the University of Edinburgh to be included among the places of professional education approved in connexion with preparations for the Professional Examinations of the Institution. The Council have agreed to add the University to the list, subject to certain additions to the present curriculum to cover the requirements of the Institution Examinations. Similar applications have been received from other teaching bodies in England and Scotland, the effect of which will be to link the examination system with all the principal training colleges of the United Kingdom, thus greatly enlarging the opportunities for study available for young surveyors of all classes.

The Council record with deep regret the death of their colleague, Mr. George Spencer Mathews, of Birmingham, whose brother also served for some years on the Council, and whose father was one of the first Vice-Presidents and a Founder-Member of the Institution.

By the death of Mr. Gilbert Murray the Institution has lost a member devoted to its interests, who for many years rendered it valuable service as an examiner in one of the most important subjects, and whose sagacious advice on difficult points of professional practice was always willingly rendered to fellow members.

"Towards the end of last year the Council received with the greatest regret an intimation from Mr. Penfold of his desire to relinquish the office which he has held with such honour to himself and such advantage to the Institution since its establishment thirty-six years ago. A little later on Mr. Penfold will be asked to accept a presentation portrait, painted by Mr. G. P. Jacomb Hood, and subscribed for by a large number of members, when an opportunity will occur of expressing in fuller and more adequate terms the sentiments of cordial regard entertained for Mr. Penfold by the whole body of the members. The Council have been fortunate in securing, in the person of Mr. Percivall Currey, who has been for many years a Fellow of the Institution, and comes of a distinguished family of surveyors, an excellent successor to the office vacated by Mr. Penfold at the beginning of the present year.

'There is evidence of a marked tendency towards an increase in the number of Colonial members, which may be taken as a gratifying proof that the reputation of the Institution is spreading throughout the Empire, especially among persons in official circles, and it may become a question later on whether the Institution should introduce examinations in the Colonies for the admission of the various classes of surveyors not affected by the licensing ordinances of the different Colonial Governments."

The Council have given consideration during the session to the question whether anything further can be done in the interests of Professional Education and generally for the benefit of members, and, with this object in view, have been in communication with the various country committees as to the advisability and practicability of holding, at the expense of the Institution, courses of lectures on suitable subjects at the principal universities and technical institutes in the various provincial centres. Owing mainly to geographical difficulties, many of the committees do not see their way to give practical effect to the proposals, but in some of the larger centres, where the membership is less scattered, it is hoped that some arrangements of the kind may be made during the coming winter.

At the invitation of the London County Council, the Council of the Institution, assisted by a representative committee, have devoted considerable time and labour during the session to the framing of proposals for the amendment of the present London Building Acts. During the progress of the Bill of 1894 through Parliament, the Institution was largely instrumental in greatly modifying (and the Council venture to think improving) its provisions in the form in which the Bill was first introduced, and this being so, the most recent proposals of the Council were necessarily limited to defects in the Act of 1894 which have revealed themselves in practice, to provisions to meet new methods of construction introduced since the passing of the Act, and to the desirability of giving an appeal to the Tribunal created by the Act of 1894 on many points on which a discretionary power at present resides with the superintending architect. It is hoped that some, at any rate, of the suggestions referred to will commend themselves to the London County Council and the Legislature.

An effort will be made during the current session of Parliament to re-introduce the Bill, prepared and promoted by the Institution and the Royal Institute of British Architects, for the amendment of the law as to easements of light, but, like all private Bills, its chances of passing are small, unless the Government can be induced to regard it with a friendly eye. With the same object in view the Council agreed to contribute to the costs of the appellant in the action of Colls *v.* Home and Colonial Stores, in the hope that some recent decisions most adverse to building operations in London, and to the interests of property owners might be over-ruled by the House of Lords. This hope has now been realised, and the result will be regarded with general satisfaction.

The Institution, in common with other bodies incorporated by Royal Charter, has suffered from the unauthorised use by unscrupulous persons of its title and designatory letters. It is too early to make any definite announcement as to the steps being taken to remedy this state of things, but the Council are not without hope that the action which they are taking, in concert with other societies similarly situated, may result in the securing of some measure of protection against this growing evil.

"The Council have felt it their duty to oppose the grant of a licence of incorporation under the Companies Acts to a new body entitling itself the Quantity Surveyors' Association, on the ground that there is no necessity for the establishment of any new society of the kind, as this branch of practice is already adequately represented by the Institution, and enjoys in that connexion every advantage possessed by other classes of members. The Council invited the promoters of the new society to meet them in conference with a view to discovering, if possible, whether there were any respects in which the usefulness of the Institution to the general body of Quantity Surveyors could be increased, hoping in this way to remove any reasonable grounds for the formation of a separate society, but this invitation meeting with no response, it became necessary for the Council to do their utmost for the protection of the interests of the Institution."

The Council are glad to note that a much larger use is being made of the Loan Library as the members come to realise its advantages. During the year 496 works have been issued. The number of members who have made use of the Loan Library has been 196, of whom 93 were town and 103 country members. Steps are taken, from time to time, to multiply the number of copies of books proved to be in considerable request.

There have been some interesting additions to the Forestry Museum, for which the Council are indebted to some of the members specially interested in the subject. It is hoped that it is now fairly representative of the various features of British woodcraft, and at the request of the Royal Agricultural Society of England, the Council have undertaken to send an exhibit to the Show at Park Royal in June next.

During the past year the register has been a means of helping a good many of the younger members to obtain employment, and there is every reason to believe that, as it becomes better known, it will prove still more useful for the purposes for which it is designed.

The report and balance-sheet having been approved and adopted, a vote of thanks to Messrs. Newmarsh and Stanley Hicks, the auditors, was agreed to, and these gentlemen were re-elected.

A vote of thanks was also accorded to the President, Vice-President, and other members and associates of the Council for the manner in which they had administered the affairs of the Institution.

Mr. Stenning then moved that a hearty vote of thanks be accorded to Mr. Currey, the Hon. Secretary, Mr. Julian C. Rogers, the Secretary, and the other officers of the Institution for the able manner in which they had served the Institution.

Mr. Langridge seconded, and expressed the great regret of the meeting in the absence of Mr. Rogers owing to his recent accident.

The motion having been heartily agreed to, Mr. Currey briefly replied, stating that he hoped and believed that Mr. Rogers would soon be able to resume his duties.

On the motion of Mr. Scoble, a vote of thanks was accorded to the scrutineers, and the President then distributed the prizes to the successful competitors.

On the motion of Mr. H. Chatfeild Clarke, seconded by Mr. Warner, a hearty vote of thanks was passed to the President, and Mr. Buck briefly replied. Mr. Steward, the newly-elected President, was then invested with the chain of office, and, having taken the chair, he thanked the members for the honour they had conferred upon him in electing him as their President.

The proceedings then terminated.

THE CLIFF AUTOMATIC FIRE-HOSE REEL.—This appliance is intended to be attached directly to a water pipe, and the hose coupled directly to a valve fixed in the pipe line. The reel consists of a cast-iron wheel of strong design, and the hose is wound on the reel in single layers one above the other, thus preventing folds or creases and greatly prolonging its life and utility. A great advantage possessed by this appliance is that it is perfectly automatic. The unwinding of the hose in any desired direction opens the valve gradually after 20 ft. of hose has been unwound, but the full supply of water is not obtained until the whole has been unwound. Although the reel does not swing, the hose can be drawn from it in any desired direction, and a stream of water may be directed against any point in a few seconds. On a recent occasion when an outbreak of fire threatened serious damage to the Hamburg Pier, New York, the night watchman was able to extinguish the flames with an appliance of this kind before the arrival of the city firemen; a very fortunate circumstance, as 1,000 barrels of lard were lying on the pier at a short distance from the point where the fire occurred. When once fixed this device is always ready, and can be used by anyone without previous instruction.

MEMORIAL, PETERBOROUGH CATHEDRAL.—At Peterborough Cathedral the Bishop of the Diocese recently dedicated a memorial to the late Dean of Peterborough. The base of the cenotaph was designed by Mr. Bodley, R.A., and the recumbent figure in white Carrara marble was the last work of the late dean's brother, Mr. Walter Rowlands Ingram, who died just after the work was completed.

ARCHITECTURAL SOCIETIES.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—The Seventeenth Annual Report of this Society shows that the number of members is at present 88—viz.: 49 members, 13 associate members, and 26 associates. The Report states that important steps have been taken to improve the ordinary local facilities for architectural education. At a meeting held on July 10 the President reported the result of a conference of presidents of the allied societies which he attended at the Royal Institute upon this question, and the Council entered into communication with the Architectural Association of London and the allied societies of Bristol and Cardiff with a view of co-operation in the provision of lecturers, the Architectural Association being asked if it was deemed feasible to extend its teaching to the provinces in connexion with the local technical schools and colleges; for instance, Exeter, Bristol, and Plymouth might form a district for a visiting teacher. The Architectural Association replied favourably, and the following copy of the report of their Committee was received:—

"Resolved that provincial students be allowed to submit drawings in the School of Design at a fee to non-members of 7s. 6d. per session, members 5s., the drawings to be criticised by the same visitor as in London, and it is proposed that his criticisms of the provincial designs should be written down and signed by him, and that at the end of the session the various societies will arrange for an exhibition of the designs submitted by their members.

"Resolved that a second visitor be appointed to assist if the number of drawings submitted is large, and that one of the visitors should visit one of the provincial societies and take with him some of the best London designs submitted.

"Resolved that it be suggested to the societies that they should institute prizes for their members on similar lines to those given in the Architectural Association School of Design.

"Resolved, with reference to the provision of a paid lecturer, that it would be possible to organise such a scheme by which a lecturer would deliver six lectures per session in each centre, say Cardiff, Devon, Exeter, and Plymouth, on the following subjects:—

1. General History of Architecture.
2. Principles of Design.

The fee suggested is twenty guineas for six lectures, plus the lecturer's expenses.

It would be required that provincial societies should pay travelling and hotel expenses to the visitor, or to arrange for his entertainment.

It is understood that the scheme shall be quite self-supporting, and entail no expenses to the Architectural Association."

A circular was then issued to every recognised practising architect in Devon and Cornwall asking whether they approved of and would support the extension to this province of the Architectural Association School of Design and the suggestion of a paid visiting lecturer. Seventy-five circulars were sent out, and twenty-one replies were received, all being in favour. Of the twenty-one principals, nine have no pupils, and the remaining twelve have sixteen pupils. At a general meeting on February 26 it was decided to accept the terms of the Architectural Association enabling their members to join the Class of Design. It was also resolved that further particulars be obtained with regard to the provision of lecturers.

PATENT REMOVABLE WINDOW BARS.—Messrs. Ellen and Co., of Billiter-street, send a description and diagram of their patent window bars, which are held by a fastening rail secured by a padlock, and detachable at pleasure by anyone who has the key. This would hardly do for outside bars, as the lock might be picked; but for bars fixed inside a window it may be a great convenience, as there are often occasions when the bars are for the moment in the way; and to be able to detach them without a lengthened operation of unscrewing and screwing up again may be desirable from time to time. The apparatus seems quite simple, and the bars would be as secure as usual so long as they were locked.

TUDOR HOTEL, OXFORD-STREET.—A novel project is about to be carried out at the Tudor Hotel by the conversion of the flat roof for purposes of an outdoor garden café, to be gained by means of a lift. The hotel is owned by members of the International Society of Waiters, the Geneva Union, and was built, at the corner (east) of Dean-street, a few years ago, after Mr. P. E. Pilditch's plans and designs.

UPPER FLOOR PLAN.

SCALE OF FEET.

Dominion of Canada Emigration Offices.

Illustrations.

SCULPTURE FROM THE ARA PACIS AUGUSTÆ, ROME.

THE reliefs, photographs of which are reproduced in the plate, belong to the wall of blocks of marble which surrounded the Ara Pacis Augustæ in the Campus Martius at Rome. Figs. 1, 2, 4, and 5 belong to the lower portion of the exterior, Fig. 4 having been one of the angle pilasters on the left, while Fig. 5 is precisely similar to the mass of acanthus leaves at the bottom of Fig. 1, but photographed on a larger scale. Figs. 3 and 6 belong to the upper portion, in which were shown two processions advancing to sacrifice; the bearded figure in Fig. 3 is probably a symbolical representation of the Roman senate, while the olive-crowned men in Fig. 6 are some of the immediate attendants of the Emperor—possibly members of his family.

All these fragments have been brought to light by the recent excavations, the first official report of which appeared not long ago in the last number of the *Notizie degli Scavi* (nominally for November, 1903). An account of a lecture on the subject by Mr. Stuart Jones appeared in the *Builder* for March 5 of this year.

DOMINION OF CANADA EMIGRATION OFFICES, CHARING CROSS.

THE front of this building is of Portland stone, the main columns being Red Mansfield, and those in the upper stories grey Scotch granite.

In order to obtain a proper foundation the main piers were carried down to a depth of about 26 ft. below the pavement level.

By an agreement made many years ago, Messrs. Cox, the bankers, adjoining, were entitled to carry up their building at the back to suit their requirements, and the owners of Nos. 11-15 have recently enjoyed the same privilege.

The building was erected by Mr. Henry Lovatt, of Wolverhampton, and Mr. Alfred H. Hart is the architect.

The drawing is exhibited at the Royal Academy.

HOUSE, EGLINTON DRIVE, GLASGOW.

THIS house was built as a town residence for Mr. Thomas Prentice, of Glasgow, and was completed in the summer of last year. A certain Italian feeling has been given to the design in order to be in harmony with the adjoining buildings and at the same time suitable to the locality in which the house is situated.

The external walls are built of local sandstone, and the roofs are covered with sand-faced tiles supplied by the Broseley Tileries Company. The whole is surmounted by a cupola, which lights the upper part of the staircase and landing.

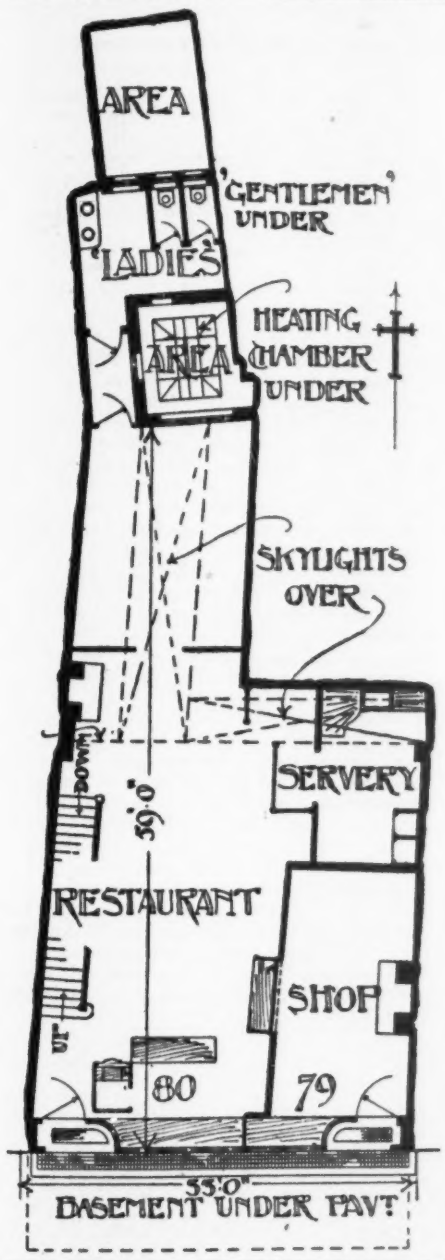
A special feature has been made of the hall of this house by the introduction of intersecting plaster vaults supported on red sandstone Doric columns. The fireplace is also of the same material, with projecting Italian hood, while the steps of the staircase are of solid teak moulded on the under side.

On the first floor are five principal bedrooms, a dressing room, two servants' bedrooms, work room, and two bathrooms, etc. The architect is Mr. A. N. Prentice, of London, who also prepared the accompanying illustration.

BUSINESS PREMISES, HIGH HOLBORN.

As originally designed, this building was to be in one occupation as a restaurant, the main feature of the ground plan being a central entrance opposite a good staircase in a central well leading to and lighting the basement. The upper floors were to be used as ladies' room, smoking-room, administrative offices and kitchen, etc., on top floor, all communicating with passenger and service lifts. The central stair from ground floor to basement and the passenger lift have been omitted, and the shop divided.

The shop front as executed is in teak with maple inlay, and is of a more architectural character than that illustrated.

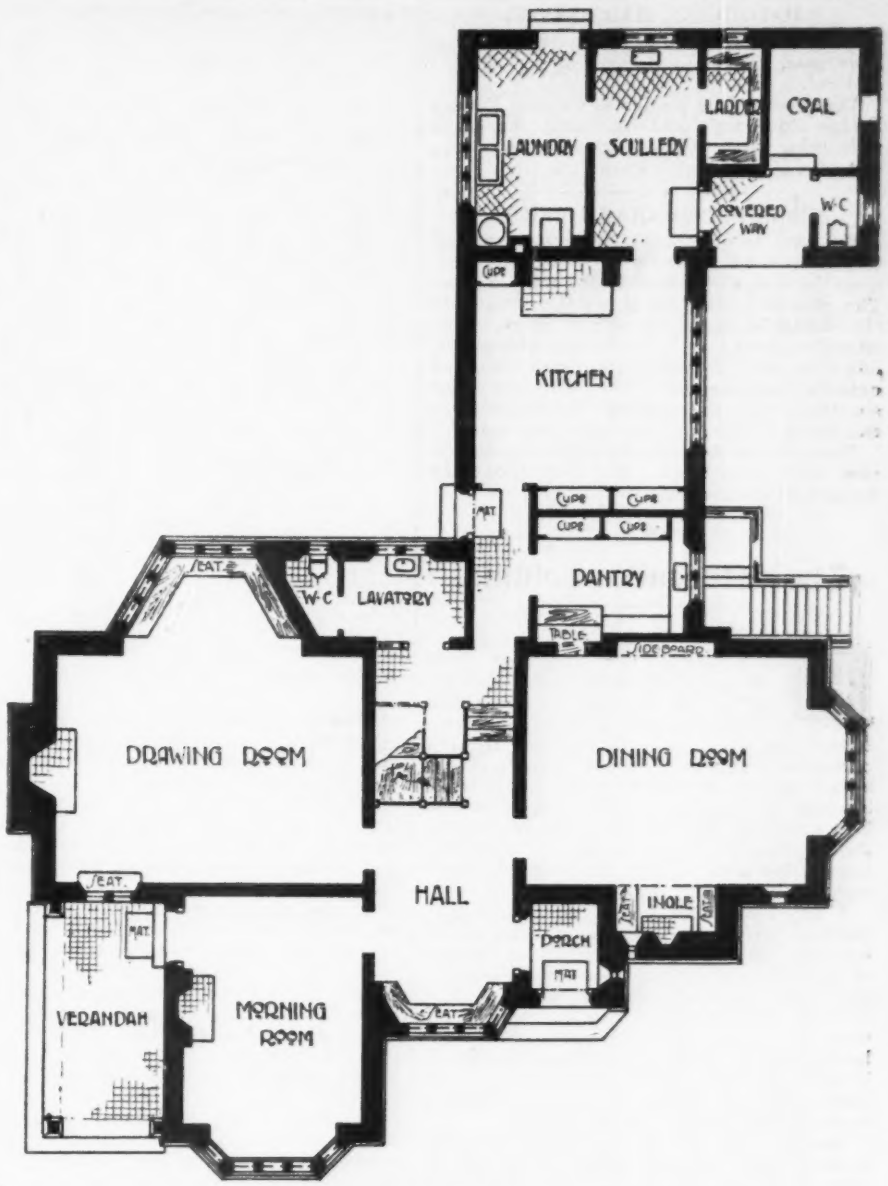


Business Premises, Holborn. Plan.

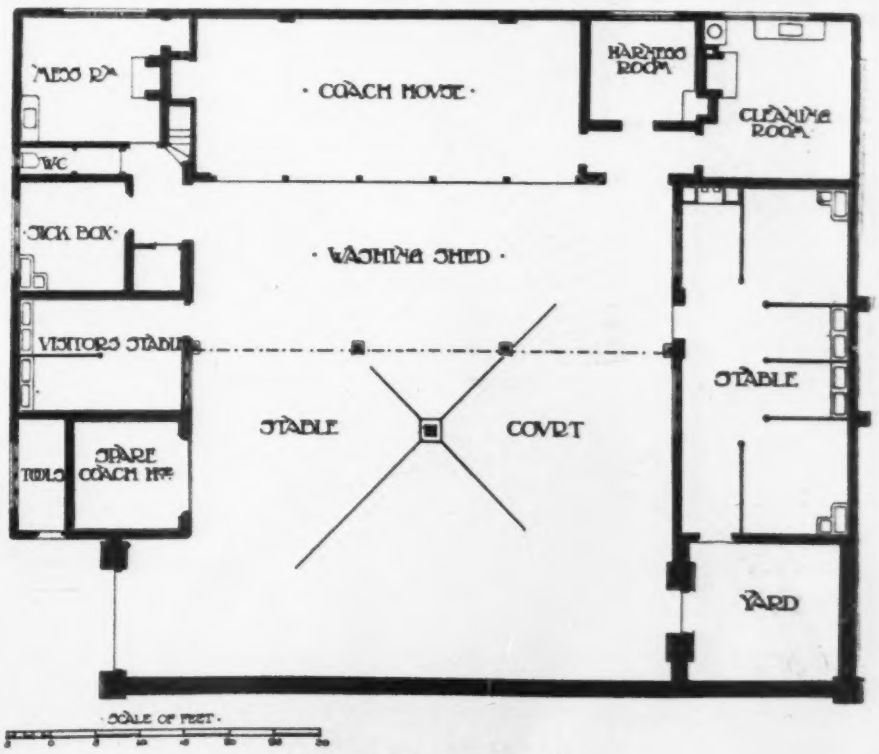
Each floor is carried without column or stancheon supports, and to get the maximum of light the main girders, which are deep and show below the ceilings, run from front to back walls, and in spite of low ceilings the lighting is successful. The basement and ground-floor walls are lined with tiling. Hot water for supply and heating is from a vertical boiler in the basement.

The front is of red brick and Portland stone, with bright green vitreous mosaic frieze and cheeks to the entrances.

Messrs. Patman and Fotheringham were the builders, and Mr. Waymouth, of Messrs. Lacy W. Ridge and W. Chas. Waymouth, architects, s responsible for the design.



"Dalguire," Harrogate.



Stables, "Brahan," Perth. Plan.

"DALGUIRE," HARROGATE.

THIS is a house built a few years ago at Harrogate, from the designs of Mr. F. W. Bedford.

The ground-floor portion is built of Pateley Bridge stone and local sandstone, the upper walls being partly covered with red tiles.

A plan of the house is appended.

STABLES, "BRAHAN," PERTH.

WE gave in our issue of May 14 a view of the house built under the title of "Brahan," from the design of Messrs. Bedford and Kitson. The present illustration shows the exterior of the stables in connexion with it, in which an effort has been made to give some picturesque effect to what is really little more than an exterior enclosing wall. The effort was so far successful that the drawing was accepted at the Royal Academy at the time it was made.

The walls are covered with roughcast, and the roof with green slates. The plan shows the accommodation provided.

The Student's Column.

ARCHES.—XXII.

BRICK arches are sometimes built of specially-formed bricks, moulded or rubbed so as to suit the radius of the arch, and at others of ordinary bricks. In either case the bonding requires particular attention. When wedge-shaped bricks are employed ordinary methods of bonding may be adopted, but the joints between bricks with parallel surfaces frequently require the addition of packing, usually applied in the form of thin pieces of slate driven into the outer ends of the joints.

A very common method of construction is to build the arch in concentric rings, laying all the bricks as stretchers perpendicularly to the axis of the arch, and relying upon the adhesion of the mortar to connect the several rings. This form of construction is not to be recommended where great strength is required unless the bricks are laid in cement mortar. By Fig. 88 it will be seen that the radial joints are necessarily broken, owing to the different number of bricks in each of the concentric rings.

Another method is to lay some of the bricks as headers and some as stretchers, as in Fig. 89, thus practically forming a single ring with continuous or unbroken radial joints, which must be thickened at the outer end by mortar, preferably with the addition of slate packing.

Still another method is to adopt the *block in course bond*, which is formed by dividing the arch ring into a number of sections, each consisting of a block of brickwork, and making the joints continuous between the sections, as in Figs. 90 and 91. The bricks of the separate blocks may be laid with any bond, either with continuous or broken radial joints. Fig. 92 represents a variation of this type of construction, in which some of the blocks are divided by circumferential joints.

Strips of hoop-iron, laid circumferentially, laterally, and radially, in the joints of an arch add very considerably to their cohesion. The ends of the hoop-iron placed in the circumferential joints should be long enough to be turned down and inserted in the radial joints of the brickwork. Strips applied in a radial direction may also be bent over and built into the horizontal joints of the backing and spandrels.

Rankine says that by the aid of a hoop-iron bond Brunel built a half-arch of brick, laid in strong cement mortar, which stood projecting from its abutment like a cantilever to the distance of 60 ft., until it finally failed owing to the foundation being undermined.

In place of the thin gauge hoop-iron commonly used it is better to employ thicker strips of mild steel, for the additional strength afforded by the metal depends entirely upon the rigidity of the ends turned over into the joints, more or less perpendicular to those in which the greater length of the metal is embedded. Further, the rigidity of the ends is approximately as the square of the thickness. Hence the thickness of the strips might very well be made almost as great as that of the mortar joints. The strips ought to break joint with each other, and the ends should be bent down for at least 2 in.

TABLE IX.—ULTIMATE COMPRESSIVE STRENGTH OF BRICKWORK. (WATERTOWN ARSENAL TESTS.)

Mortar.				Strength of the Brickwork, lbs. per sq. in.	Strength of 6-in. Cubes of the Mortar, lbs. per sq. in.	Relative Strength of the Brickwork. Mortar = 1.
Lime.	Cement.		Sand.			
	Portland.	Natural.				
1·0	—	—	3·0	1,508	124	12·0
0·5	—	1	1·5	1,646	183	9·0
0·5	1	—	1·5	1,411	192	7·0
—	—	1	2·0	1,972	162	12·0
—	1	—	2·0	2,544	545	4·7
—	—	1	—	—	521	—
—	1	—	—	2,375	3,483	0·7

TABLE X.—ULTIMATE COMPRESSIVE STRENGTH OF BRICKS AND BRICKWORK.

Description of Bricks.	Average Strength of Bricks, lbs. per sq. in.	Strength of Brickwork in Mortar of Different Composition.			
		Lime 1 Sand 2	Lime 7 Cement 1 Sand 16	Cement 1 Sand 6	Cement 1 Sand 2
Clinker Stock	5,390	2,370	2,590	2,960	3,410
Selected Stock	3,669	1,620	1,760	2,020	2,320
Ordinary Stock	2,930	1,290	1,390	1,610	1,850
Perforated	2,759	1,210	1,320	1,520	1,710
Porous	2,617	1,150	1,250	1,440	1,650
Perforated Porous	1,195	530	570	650	750

One great objection to the use of concentric brick rings built as in Fig. 88 is that the rings act more or less independently, and it is, therefore, impossible to determine the precise proportion of the load carried by each ring.

Consequently, one ring may have to support a far greater load than that intended by the designer. In practice, however, this disadvantageous characteristic rarely causes danger, because the unit working pressures adopted are usually extremely small as compared with the ultimate strength of the brickwork. The mean working pressure on brick arches is rarely more than 40 lb. per sq. in., and it will be seen from Tables IX. and X. that this is low enough to permit very considerable divergency from theoretical conditions without involving the slightest risk.

These tables also serve to suggest that, so far as pressure is concerned, modern practice errs very largely on the side of safety. Table IX. is based on tests made at Watertown Arsenal upon brick piers 12 in. square, and from 1 ft. 4 in. to 10 ft. high, and Table X. gives the results obtained from German tests quoted in "The Proceedings of the Institution of Civil Engineers," Vol. lxxix.

For some reasons, however, the ring bond is to be preferred in practice. It affords a 4-in. toothing for cement, and the work can be executed rapidly with less risk of inferior workmanship than in the case of the other bonds mentioned.

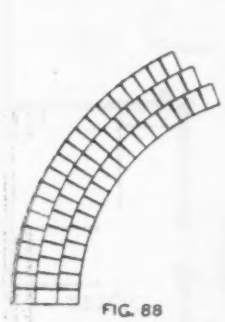


FIG. 88

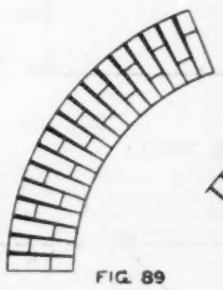


FIG. 89

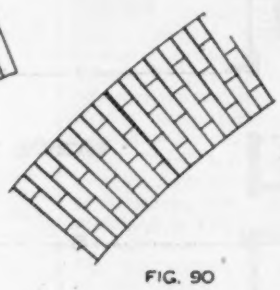


FIG. 90

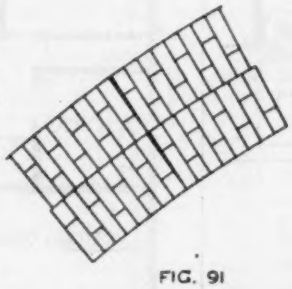


FIG. 91

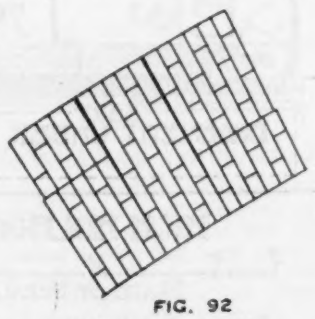


FIG. 92

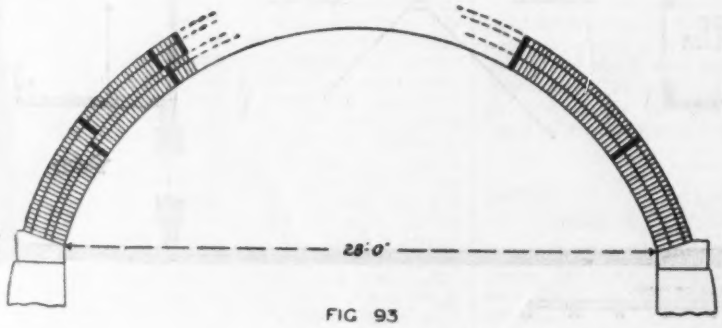


FIG 93

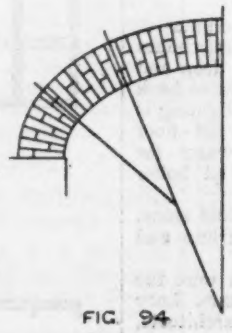


FIG. 94

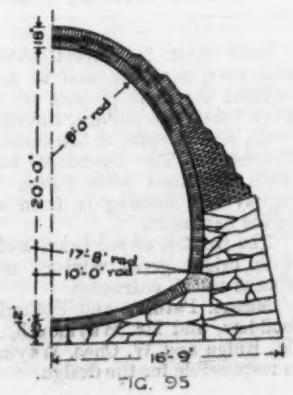


FIG. 95

"INK-PHOTO" SPRAGUE & Co. LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

N ARSENAL TESTS.)

Relative Strength of the Brickwork. Mortar=1.
12·0
9·0
7·0
12·0
4·7
—
0·7

ICKWORK.

erent Composition.

1 6	Cement 1 Sand 2
	3,410
	2,320
	1,850
	1,710
	1,650
	750

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Table X. gives the
an tests quoted in
Institution of Civil

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nd the work can be
s risk of inferior
e of the other bonds

FIG. 92

G. 95

SCULPTURED FRAGMENTS FROM

"INK-PHOTO" SPRAGUE & Co. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

FROM THE ARA PACIS AUGUSTÆ, ROME.

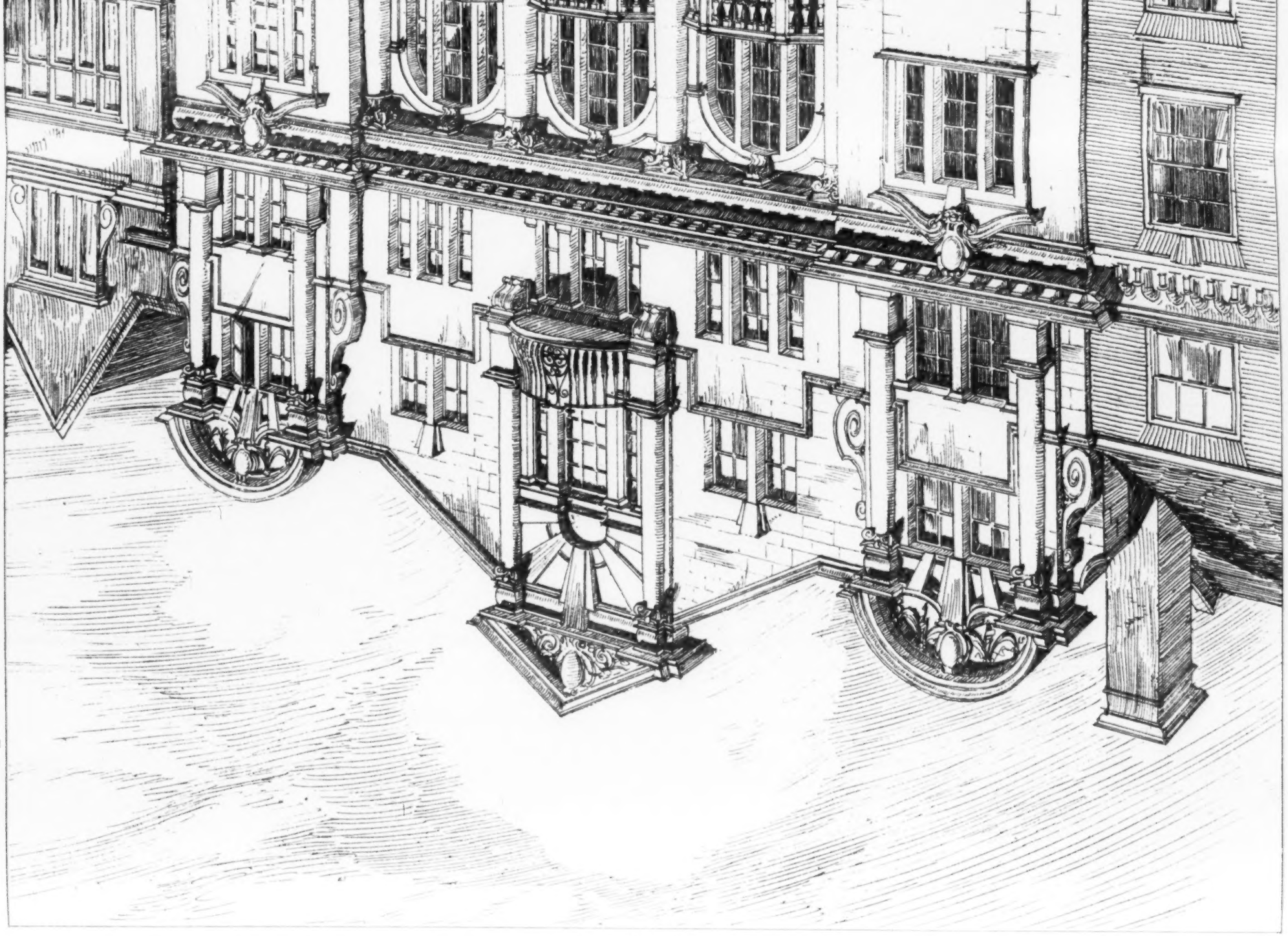
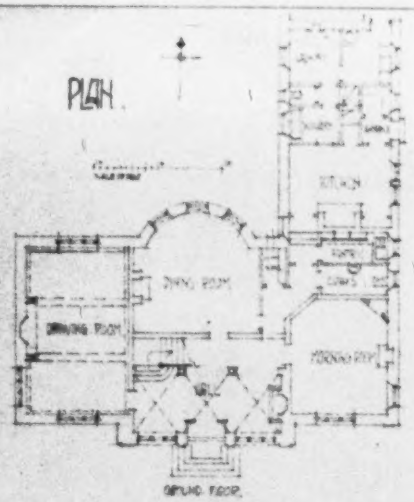


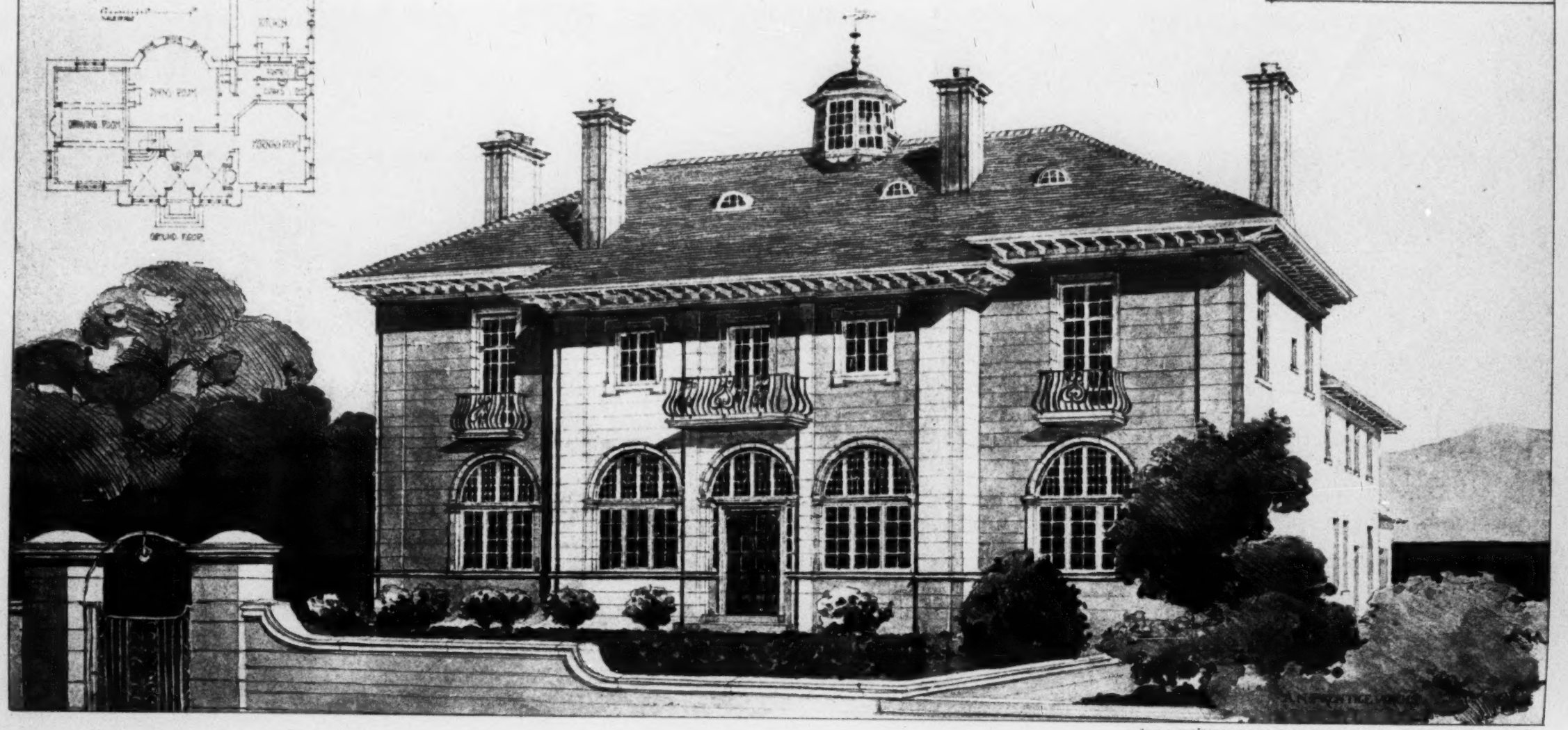
PHOTO LITHO SPRAGUE & Co LTD 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

DOMINION OF CANADA EMIGRATION OFFICES.—Mr. Alfred H. Hart, A.R.I.B.A., Architect

PLAN.



NEW HOUSE.
EGLINTON • DRIVE • GLASGOW.



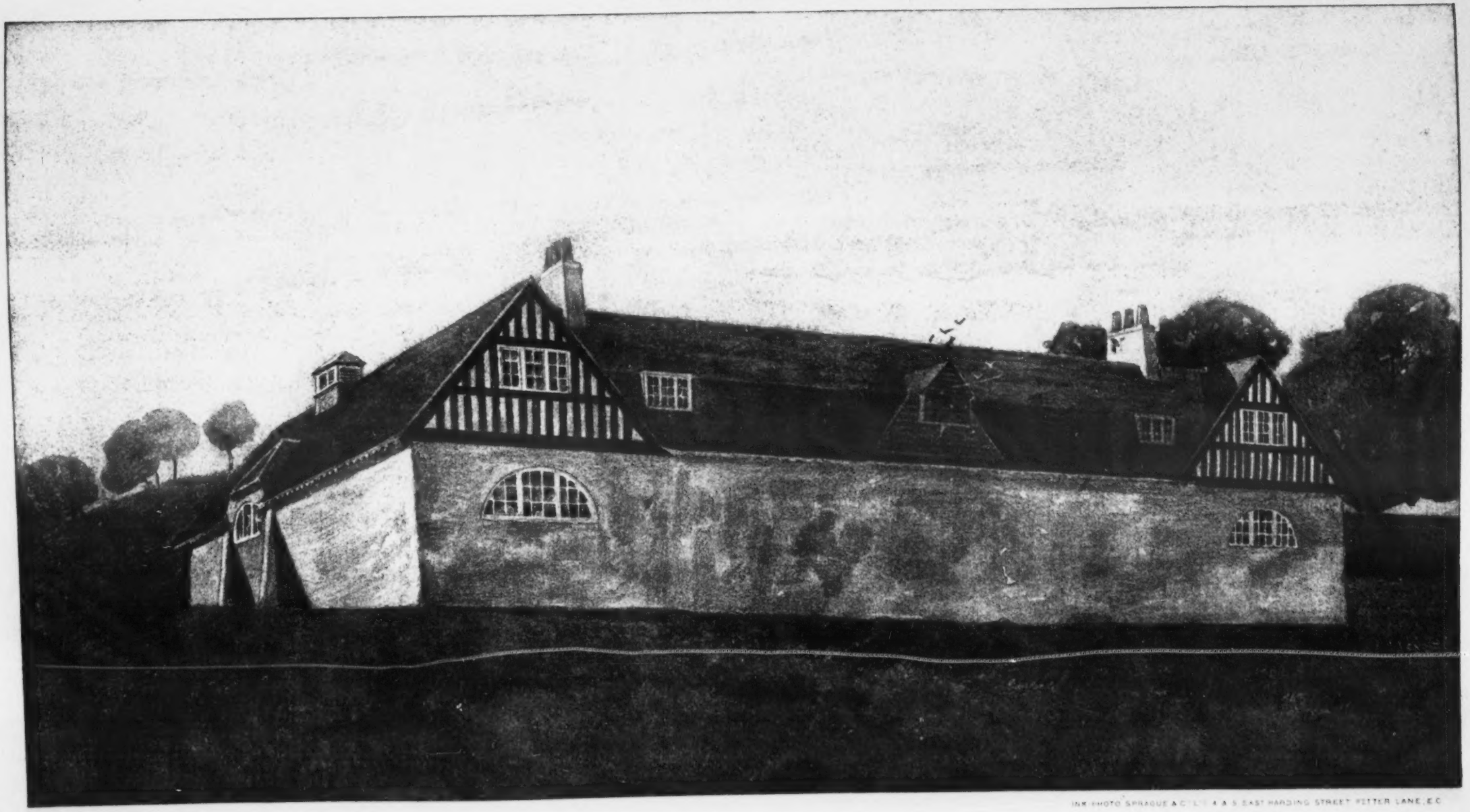
"INK-PHOTO" SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

BUSINESS PREMISES.
HOLBORN.
W. CHAS WAYMOUTH
ARCHITECT.

"INK-PHOTO," SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

"DALGUIRE," HARROGATE. Mr. F. W. D[illegible]

INS PHOTO SPRAGUE & C[illegible] 4 & 5 EAST HARDING STREET FETTER LANE E.C.



INK PHOTO SPRAGUE & C° LTD 4 & 5 EAST HARDING STREET FETTER LANE E.C.

STABLES: "BRAHAN," PERTH.—Messrs. Bedford & Kitson, Architects.

When the bond with continuous radial joints is adopted the thickened outer ends of the joints become compressed on the removal of the centring, thus concentrating pressure at the intrados. This effect is less marked when the bond is applied to comparatively narrow sections of an arch, as in the middle section of brickwork in Fig. 92. For arches in which heavy pressure is to be imposed on the brickwork the block in course bond is to be recommended.

Owing to the large number of joints in brick arches, the settlement taking place after the removal of the centring is always comparatively great. Consequently, stone is preferable for arches of large span or of small rise. Nevertheless, as will be seen by reference to Table VIII., Article XX., many brick arches of large span have been built, and Trautwine cites examples of 50-ft. brick arches in which the rise is only 7 ft.

The latter form part of a viaduct on the Philadelphia railroad, and have been subjected to heavy goods and passenger traffic since the year 1880. The arch rings are 2 ft. 6 in. thick, the joints being in lime mortar and about ¼ in. thick. One of the arches settled about 3 in. after the centring was struck, but no further settlement was observed.

The following specification for brick arch masonry is that adopted on the Atchison, Topeka, and Santa Fé Railway, U.S.A. :—

"The bricks must be of the best quality of smooth, hard-burnt paving bricks, well tempered and moulded, of the usual size, compact, well-shaped, free from lime, cracks, and other imperfections, and must stand a pressure of 4,000 lb. per sq. in. without crushing. No bats will be allowed in the work except for making necessary closures. All bricks will be culled on the ground after delivery and selected in strict accordance with these specifications.

"The mortar must be made of 1 measure of good natural hydraulic cement and 2 measures of clean, sharp sand—or such other proportion as may be prescribed by the engineer—well mixed together with clean water, in clean mortar-beds constructed of boards, and must be used immediately after being mixed.

"The brick must be laid flush in cement mortar, and must be thoroughly wet when laid. All joints and beds must be thoroughly filled with mortar so as to leave no empty spaces whatever in the masonry of the walls and arches, which must be solid throughout. The thickness of mortar-joints must be as follows:—In the walls and in the arch between bricks of the same ring not less than three-eighths of an inch (⅜″) nor more than one-half inch (½″). In the arch between rings not less than one-half inch (½″) nor more than five-eighths of an inch (⅝″). Each brick is to be driven into place by blows of a mallet. The bricks must be laid in the walls with the ordinary English bond, five stretcher courses to one header course. They must be laid in the arch in concentric rings, each longitudinal line of bricks breaking joints with the adjoining lines in the same ring and in the ring under it. No headers to be used in the arch."

Fig. 93 represents the left and the right halves of two brick arches each with a span of 28 ft. One of these is built in four rings, two of 9 in. and two of 4½ in.; and the other in three rings, two of 9 in. and one of 4½ in. It will be observed that the rings are bonded at various points by continuous or partly continuous radial courses.

Fig. 94 represents a so-called elliptical arch built with wedge-shaped or gauged bricks. A truly elliptical curve would be extremely inconvenient for an arch built with gauged bricks, for, as the bed joints must be normal to the intrados, all the bricks would be of different shape, and this would entail much unnecessary expense. By adopting a three-centred curve, as in the figure, only three templets are required for shaping the bricks, and the radial bed joints can be struck from the centres of the segments forming the curve of the intrados.

Fig. 95 is an example of brick masonry as applied to the construction of a large sewer.

Brick arches are very largely used in this country in highway and railway bridges, as well as in railway tunnels. Actual examples are, therefore, available for examination by the student in almost every district. The general principles governing the design of brick arches are the same as those applying to stone arches, and which have already been discussed in previous articles.

COMPETITIONS.

CHURCH, HALIFAX.—The plans of Messrs. Sutcliffe and Sutcliffe, architects, Hebden Bridge and Todmorden, for the new St. Hilda's Church to be erected at King Cross, Halifax, have been selected by Mr. H. Scott, the diocesan architect, to whom they were submitted along with five other sets. The estimated cost of the edifice is about 10,500*l*.

NEW SOMERBY CHURCH SCHEME.—The time for sending in plans is extended to July 31.

Books.

British Engineering Standards Coded Lists. Issued by authority of the Engineering Standards Committee. Vol. I. Rolled Sections for Constructional Iron and Steel and Tram Rails. Compiled by ROBERT ATKINSON. London: Robert Atkinson, Limited. 1904.

WE have already reviewed some of the matter contained in the present volume, which has appeared in separate form—namely, the history and work of the Engineering Standards Committee, and the lists of rolled sections for constructional iron and steel, and of tramway rails and fishplates. Much other material will be found in this book, which ought to be of great service to architects, engineers, and merchants in all parts of the world. It includes directories of rolling mills, constructional engineers, and iron merchants, together with the sizes of structural iron and steel rolled or stocked by them, and of railway carriage, wagon, and tramcar builders, and shipbuilders, these directories covering some 168 pages. After them comes the Engineering Standards Code, which, with its index, occupies over 200 pages, and appears to provide for telegraphic communication upon almost every contingency likely to arise in connexion with the ordering of materials. The work is a handsome quarto volume, well printed on paper which, like the binding, seems well adapted to stand the heavy and constant usage it is likely to receive.

Dynamo, Motor and Switchboard Circuits for Electrical Engineers. By W. R. BOWKER, C.E. London: Crosby Lockwood and Son. 1904.

THE author has compiled a volume consisting mainly of diagrams, most of which will prove instructive to youthful electrical engineers. The diagrams of electric car connexions and controllers are clearly drawn. Several different ways of representing these are shown, and this will be a real help to the beginner. A few of the diagrams should be redrawn; for example, Figures 69 and 108. In Fig. 108 there are two ammeters in series with a wattmeter, and if the double-pole switch L is closed they would all be burned out. The discriminating transformer is also put in apparently for ornamental purposes, as it is only connected with one bus bar. The descriptive letter press is not good. We are fairly familiar with electrical jargon, but we never heard of "phasing-up the phases" before coming across it in this book. The introduction, which is inaccurate, should be rewritten. Some of the definitions seem to consist of putting the words defined within inverted commas. Section 9 is entirely erroneous, and the definition of the power factor in section 11 is wrong. Users of this volume had better get their knowledge of the subject from books which adopt what the author calls the "Theoretical, Mathematical, and Text-book point of view."

Recent Improvements in Methods for the Bacterial Treatment of Sewage. With a description of the Author's Multiple Surface Bacteria Beds (Patent No. 16,851, 1903), giving double the usual working capacity, with Aërobic Action throughout. By W. J. DIBDIN, F.I.C., F.C.S., etc., formerly Chief Chemist to the Metropolitan Board of Works and the London County Council. London: Sanitary Publishing Co., 5, Fetter-lane, Fleet-street, E.C.

WE are not quite sure from the title-page (which we have printed *in extenso*) whether this pamphlet ought to be noticed under "Trade Catalogues" or under "Books," but have decided to give it the benefit of the doubt. It is a small pamphlet of thirty-two pages, of which eleven are occupied by a synopsis of the reports of the Royal Commission on Sewage Disposal. The author states in the Prefatory Note that it "may be looked upon, in some respects, as a supplement" to the third edition of his *Purification of Sewage and Water*, which was reviewed in these columns a few months ago. Mr. Dibdin, quite naturally, is prepossessed in favour of the contact-bed system, which he was the first to adopt on a large scale, and for the improvement of which he has done so much, and some of his arguments appear to us to bear evidence of this prepossession. Surely it is somewhat far-fetched to compare the Thames, prior to the construction of the main intercepting sewers, to "a large septic tank," and thus to convey the impression (consciously or not) that the septic-tank system is as offensive as the practice of turning large volumes of crude sewage into a tidal river at low water. The argument based on the improvement in the condition of the Thames in the neighbourhood of London Bridge, by conveying the sewage to Barking and Crossness, and discharging it into the river twelve or fourteen miles lower down "during the first portion of the falling tide," is also beside the mark. Neither aërobic nor anaërobic action had much to do with the improvement. The most interesting part of the pamphlet is that in which the author describes and illustrates the tiles and slates which he now advocates for use in the coarse primary contact-bed. They give a larger liquid capacity than coke, do not disintegrate, and can be more easily cleaned. Whether they will effect as great a degree of purification remains to be seen, but they are certainly worth a trial.

Résumé, Historical and Practical, with Notes and Comments on the Subject of Sewage Disposal. By W. H. KNIGHT, M.S.I. London: The Sanitary Publishing Co. (No date.)

THIS little pamphlet of thirty-eight pages appears to be a reprint of articles contributed to a technical paper, but we do not think that the republication will be of much service. The subject is too great to be discussed with advantage in a small pamphlet, and the author is not always a sure guide. It is not true that broad irrigation is "invariably" a failure, nor is subirrigation the only other method of treatment on land. It is a libel on the engineering profession to say that there is "a widespread idea entertained by engineers and others (who ought to know better) that the *whole* process of purification is carried out by the septic tank." The author in writing about the filtration of chemically-precipitated sewage (through artificial filters of coal, coke, etc.) seems to have no knowledge of the Local Government Board's insistence on subsequent treatment on land, and hazards the dangerous statement that the effluents from these filters were in many cases "as pure as some drinking waters"; from the chemist's point of view the organic matter in the effluents may perhaps have been small in quantity, but the bacteriologist would certainly not consider them to be as innocuous as the author's words would lead the ignorant reader to imagine. The author confesses that he has "no data" as to the purification effected by the one type of percolating filter which he mentions, and does not appear to have seen the reports and appendices which have already been published by the Royal Commission on Sewage Disposal.

Drainage, Sewerage, and Conservancy in Tropical Countries and Elsewhere. By MAJOR F. SMITH, D.S.O., R.A.M.C., D.P.H. London: John Bale Sons and Danielsson. 1904.

MAJOR SMITH'S work gained the prize offered by the Hon. E. R. Belilios, C.M.G., for the best article on "The System of Drainage and Sewerage (Domestic and Municipal) Best Suited for Tropical Climates." It appeared in the *Journal of Tropical Medicine* at the end of last year, and is now published as a little book of ninety-two pages. The author writes with an intimate knowledge of the conditions obtaining in tropical countries, and reviews briefly the different methods of drainage, sewerage, and conservancy which are now in use. We certainly think that he underestimates the dangers of cesspools and the advantages of bacterial systems of sewage purification, but there is much to be said in favour of his contention for simplicity and economy. The elaborate and costly methods adopted in this country are, according to the author, inappropriate in countries where poor and ignorant "natives" form the bulk of the population. The book cannot fail to be of use to those engaged in the sanitation of towns situate in tropical countries.

A Handbook of Sewer and Drain Cases, noted in "The Surveyor and Municipal and County Engineer." Revised and corrected by J. B. R. CONDER, solicitor. London: The St. Bride's Press. 1904.

THIS book will be useful as a collection of memoranda of the legal decisions on the above subject. But the layman will have to use it with caution, for County Court decisions are included, and these are of no value as precedents. Likewise cases of first instance are reported; and those of the Court of Appeal are stated, as indeed are all the cases, so shortly, that the basis of the decision may sometimes be misapprehended. Subject to this caution the book will be serviceable.

A Practical Guide for Sanitary Inspectors. By FRANK CHARLES STOCKMAN, A.San.I., with an introduction by Henry Kenwood, M.B., D.P.H. Second edition. London: Butterworth and Co., and Shaw and Sons. 1904.

THIS is the second edition of a work which we noticed favourably about two years ago. The author states in the preface that the matter has been "carefully revised, brought up to date, and considerably extended." A chapter on "Building Construction" has been introduced, and additions have been made to the chapters on "Cubic Space," "Infectious Disease," etc. The book is undoubtedly a valuable work of reference for the sanitary inspector; it is well arranged, and contains all the legal enactments which he is likely to require in the execution of his duties, and much useful information on nuisances, drainage, inspection of buildings, food, etc. Some of the new matter, however, is not above criticism. The chapter on "Building Construction" shows that the author has not an intimate knowledge of the subject. It is said, for example, that Portland cement "is made from materials containing *when burnt* some 33 per cent. of clay combined with lime *and shale*," and that "footings are formed of brickwork, *generally three courses*." The italics are ours. On page 72 a table of the L.C.C. weights of lead (misprinted "land") and iron soil-pipes is given, and is said to apply only to soil-pipes "situated within any building" and not to those fixed outside. This statement is erroneous in more respects than one. In the chapter on "Cubic Space," 0·78 on page 103 should be 0·75; on page 105 the author in calculating the area of a trapezoidal bay ignores the simple rule given on page 103; and the calculation of the area of the trapezium on page 106 by means of the lengths of the four sides only is a blunder of surprising magnitude, and seems to indicate that the author does not understand the simple rule given by him on page 102 for calculating the area of a triangle. It is a pity that such errors have crept into the second edition of a work which is otherwise of considerable value.

The Pocket-book of Refrigeration and Ice-making. Edited by A. J. WALLIS-TAYLER, A.M.Inst.C.E. Third edition enlarged. Illustrated by thirty-one diagrams. London: Crosby Lockwood and Son. 1904.

THIS little book might justly be described as a treatise on the subject to which it is devoted, for, in addition to formulæ, data, tables, and memoranda, it contains a very intelligent explanation of the principles involved in refrigerating and ice-making apparatus and machines. The architect who is called upon to provide cold storage chambers and ice-houses will find much information for his guidance, especially in the chapter dealing with "Insulation." There is also a very complete index, which enables the reader to turn at once to the place where particulars are given relative to any part of the subject discussed.

A Pocket-book of Tables and Memoranda for Plumbers, Builders, etc. By J. WRIGHT CLARKE. Fourth edition. London: B. T. Batsford; 1904. 1s. 6d.

THIS is a new edition of an old and useful work, which has the merit of being really a "pocket-book" in size, so that it can be easily carried about. It contains many useful tables, practical directions for different kinds of work, and the section of electrical work especially is very fully treated.

A Précis of the English Law Affecting Landlord and Tenant. By LAURENCE DUCKWORTH, Barrister. London: Effingham Wilson. 1904.

THIS is a useful little manual on a subject interesting to very many persons. It is one of the well-known series of Wilson's Legal Handbooks. It appears to be an accurate and concise summary of the law.

BOOKS RECEIVED.

THE MODERN CARPENTER, JOINER, AND CABINET-MAKER. Edited by G. Lister Sutcliffe. Divisional-Volume VIII. (The Gresham Publishing Co.)

GAS WORKS: THEIR CONSTRUCTION AND ARRANGEMENT. By Samuel Hughes, C.E. Ninth edition, revised by Henry O'Connor, Assoc.M.Inst.C.E. (Crosby Lockwood and Son. 6s.)

GREAT MASTERS: REPRODUCTIONS IN PHOTOGRAVURE. Part XVI. (W. Heinemann. 5s.)

TRADE CATALOGUES.

THE Fireproof Company have sent us two catalogues in which their "dovetail corrugated sheeting" is described and illustrated, and also a number of drawings to a larger scale than those in the catalogue. As the name implies, the sheeting is of iron formed into a series of corrugations of dovetail section, which afford an excellent key for plaster. It is used for partitions, the finished thickness when plastered on both sides being from 2 in. to 3 in. according to the height, and is also adopted for the permanent centring of fireproof floors, for ceilings, for encasing columns and girders, and for external walls. The cross section of the sheeting ensures considerable strength, as well as a good key for the plaster, and the recent fire at 198, Oxford-street, W., proves that partitions of this kind offer great resistance to the spread of the flames; in this case the floors were of wood, and the only damage done to the Fireproof Company's partitions appears to have been the flaking of the setting coat in the parts principally affected by the fire and water.

We have received from Messrs. Johnson and Phillips, of Old Charlton, Kent, an illustrated pamphlet on "Electric Power," describing the results obtained at several of the power plants they have installed. They seem to have been particularly successful in applying electricity for mining purposes, and as some of the power stations they have erected have been working for about ten years there can be no question as to whether this application of electricity has been a success financially. Many of the points discussed will be of great interest to all concerned in mining undertakings.

Messrs. W. James and Co. send us an illustrated pamphlet of their designs for stained and leaded glass, and sections of their casements in wrought iron, gunmetal etc. The stained glass designs are only given in monochrome, and therefore we can form little judgment of them; some of the designs executed in leaded white glass, the leads forming the design, are very good. The pamphlet also describes their method of strengthening leaded glass, while doing away with the detached stay bar. This consists of a steel rod applied at intervals to the lead cames in such a way as to render it an integral part of the came. The detached bar is thus superseded; the copper wire "tie" (which is always apt to tear the clothes and scratch the hands) is entirely dispensed with; and greatly increased strength and rigidity are attained. It can be adapted to follow the lines of an ornamental design.

The B. and S. Folding Gate Company send us a small book containing illustrations of their ornamental treatment of elevator car enclosures, bank railings, etc. Most o these look well as to general appearance, and the Company are to be commended for endeavou ng to give decorative effect to such work; but the illustrations are on too small a scale for us to form any opinion as to the detail.

Messrs. English Brothers (Wisbech and Peterborough) send an illustrated pamphlet of their creosoted farm shedding, wood fencing, field gates etc. They make a point of the importance of covered yards in farms: "any improvement in shelter for stock is equivalent to an actual shortening of winter"; and also draw attention to the important addition to the life of wooden structures and fencing by creosoting. We quote the following, which we have no doubt is correct:—

"There exists a very good example in the sheet piling of the river Nene opposite our office, where the creosoted wood piling, driven in 1854-6, is still standing firm after fifty years in work, while similar piling executed in 1890, only fourteen years ago, with the same class of timber, without creosoting, has seriously decayed and has now to be replaced."

The designs for the work are plain and practical in character; for the railings and gates they are just what is wanted; in the case of the farm shed illustrated some attempt might be made to give a little more character to it; an architect could show them how to do this.

Messrs. Reid and Co. send us a book of designs prepared in their house for the decorative treatment of fire-places, sides of rooms of different classes, etc. Some of these are very good, the "Small Morning Room" and "Small Dining Room," for instance, and some of the fire-place arrangements. Of course the designing of the whole treatment of the side of a room is rather trenching on what we think ought to be the province of the architect, but if people will not go to architects to design these things, it is well that there should be trading firms who are able to carry them out in good taste.

Mr. John P. Whyte (Bedford) sends us a book of illustrations of various garden furniture—summer houses, pavilions, pigeon cotes, garden treillage, etc. As would be expected by those who know Mr. Whyte's work, these things are mostly in excellent taste; in some cases, for simple work—the dovecotes, the "Caxton" garden pavilion, the palm boxes, Nos. 1, 2, 8, and 9, etc., they could hardly be better. We do not like rustic garden houses like the "Silsoe" and "Shelton" designs, but some people will have them; and we should prefer the "rustic bridge" in squared wood, and not in the rough, bark-covered pieces; but at all events the design is treated symmetrically, and not made to look as if it were wriggled by accident. But "rustic" things generally are a mistaken taste. As a whole, however, this is a catalogue we can recommend.

Messrs. Edison and Swan send us a book of illustrations of their "Artistic Electric Light Fittings." These are elaborate and varied, but from the artistic point of view they are not very satisfactory; there is too much "wriggle" about the designs; a want of simplicity of line. The effort to produce what are called "artistic" designs too often leads to this kind of over-elaboration, which is not really artistic in spirit, unless it is accompanied by the most refined taste in details, which is hardly the case here.

The Cloisonné Glass Company send a catalogue of numerous designs made in their house for execution in their glass. There is a good deal of praiseworthy work in the designs, but too much is attempted in many of them; the pattern ones are the best, those numbered 76 to 99 (with some exceptions), and that numbered 13 for a staircase window, which is very good, and seems to be the product of a special designer. Figure subjects like Nos. 8, 9, and 10 are the kind of thing that should be done very well if done at all. The coloured plate for a conventionally treated landscape (5) is good, and reduces landscape pretty fairly to the capabilities of stained glass. The Cloisonné glass is produced as a thin layer between two sheets of glass, and cemented to the back plate by a translucent cement to keep it in position. We cannot understand how it (or any stained glass) can show "equally well with the light either transmitted or reflected"; which seems an impossibility in the nature of things. There are some practical advantages in the method, however, enabling it to be used where ordinary stained glass could not so well be employed. We notice that throughout the catalogue it is printed "Cloisonne" without the accent, which looks awkward; it is right on the outside cover.

Correspondence.

COUNTRY BUILDERS' CLERKS.

SIR,—Can any of your readers inform me if any benevolent institution exists for country builders' clerks? Such an institution is in existence in London, but, so far as I can ascertain, this is for Londoners only. INQUIRER.

BRITISH FIRE PREVENTION COMMITTEE.—The Tsar of Russia has conferred upon Mr. Edwin O. Sachs the Gold Medal for Services with the ribbon of the Order of St. Vladimir, and upon Mr. Ellis Marsland the Gold Medal for Services with the ribbon of the Order of St. Stanislas. The Home Secretary has intimated that the King has been graciously pleased to accord Mr. Sachs and Mr. Marsland permission to wear these medals.

OBITUARY.

MR. CHAPMAN.—We have to announce the death, in his fiftieth year, at his residence, King's Field House, King-street, Newcastle-under-Lyme, of Mr. Robert J. Chapman, senior partner of the firm of Messrs. Chapman and Snape, architects, surveyors, and valuers, of No. 3, Lad-lane, Newcastle-under-Lyme. In 1885 the firm submitted designs in the competition for the new Public Municipal Buildings in Newcastle-under-Lyme, for which the first premium was awarded to the designs of Messrs. Wm. Sugden and Son, Mr. John Blood, and Mr. W. H. Sugden, as joint architects. But inasmuch as Messrs. Chapman and Snape's designs contained some features which highly commended themselves to the Town Council, the successful competitors were asked to agree to an arrangement whereunder they and Messrs. Chapman and Snape undertook, conjointly, to prepare further designs which the Town Council adopted after consultation with Mr. Thomas Lewis, architect, a member of their own body. The modified plans and designs are illustrated, with two elevations and four plans, in the *Builder* of April 24, 1886. Four years ago Messrs. Chapman and Snape were appointed architects of the laundry, with other additions and improvements, of the Hospital for the Poor Law Guardians of Cheadle.

MR. ALEXANDER.—We have to announce the death, on May 15, in his sixty-fourth year, of Mr. William Alexander, of No. 32, Bank-street, and No. 4, Albany-terrace, Dundee. Mr. Alexander had been City Architect and Valuator during many years past. Amongst the more important of the buildings for which he prepared the plans and designs we may instance the following:—In Dundee, Her Majesty's Theatre, in Seagate, having a front after the manner of a Florentine palace, and a capacity of about 1,600 persons, 1885; the completion of the eastern portion, comprising the free museum and picture gallery, of the Prince Albert Institute, begun in 1865-8 by Sir George Gilbert Scott (see the article "Dundee" in the *Builder* of August 13, 1898); the business premises in Murraygate for Messrs. Smith Brothers, of which the upper four floors were planned for occupation by the Conservative Club, an insurance office, and private residents, 1897; the new offices in West Bell-street for the Combination Parish Council; the Children's Shelter, with alterations and additions, at Laurel Bank, Constitution-road, at an estimated cost of some 10,000*l.*, opened in October, 1899; the Alexander Moncur Sanatorium for consumptive patients, on the Airlie Estate, at Greenford Muir, near Auchterhouse-hill, at an outlay of about 15,000*l.*; the Andrew Carnegie Free Library, at the corner of Arthurstone-terrace and Maitland-street, for which, being the first, the Dundee District Libraries Committee approved the plans in October two years ago; the Gaiety Theatre of Varieties, in Victoria-road, in 1902, which accommodates an audience of about 1,500 persons; and the Victoria Art Galleries, near the Prince Albert Institute, opened on October 26, 1839. Mr. Alexander was the architect also of the New Theatre and Opera House in the High-street, Perth, which provides room for an audience of about 1,300 persons, and was opened in the autumn of 1900.

GENERAL BUILDING NEWS.

NEW CHURCH, KINSLEY, YORKSHIRE.—The foundation-stone of a new church at Kinsley was recently laid. The church, which is to accommodate 250 persons, will be built of red brick, and was designed by Mr. Francis Inigo Thomas. The total cost of the building will be 2,395*l.*

RESTORATION OF ASTLEY CHURCH, WORCESTERSHIRE.—The Parish Church of Astley is situated amidst enchanting scenery, and the old massive tower, which still stands as erected in the early part of the XVth century, is a conspicuous object in the landscape. From an archæological point of view the church is one of the most interesting in Worcestershire. Its history goes back to the days of the Norman Conquest, and there are features still preserved which reveal the skill of the old builders. The Norman doorway on the south side of the church is most interesting, and it has now been protected by the erection of an oak porch. Some portions of the church had got into a state of decay, and some of the pleasing characteristics of the original building were obscured. The old sandstone walls were covered with about 2 in. of plaster, and various coats of coloured wash and paint. The nave roof, dating from about 1470, was hidden behind a circular plaster deal ceiling, while the high, painted deal pews made kneeling almost an impossibility. About two years ago the Rector, the Rev. Martin B. Buckle, undertook the work of restoration, and 2,400*l.* was raised, which has been expended on the the body of the church, leaving the restoration of the tower, the insertion of new windows and buttresses to the north aisle, the provision of oak seats in the nave and north aisle, and chancel benches, and the restoration of the old churchyard entrance, at an estimated cost of 1,200*l.*, to be carried out at some future date. The Rector, who, before his ordination, was a member of the Institute of Architects, prepared the plans, and personally superintended the work, the contractor being Mr. Henry Smith, of Kidderminster and Wolverley. The nave roof has been restored and new roofs erected on the other portions of the church. The east wall of the chancel was modern. This has been removed, the chancel lengthened about 6 ft., being thus restored to its original length. The chantry chapel, which was used as a vestry and lumber-room, has been restored as a side chapel, and will now be used daily for prayer and weekday celebrations. The north aisle, erected in the time of the late Mr. Havergal in the place of the original Norman aisle, has been reroofed, and, with the exception of the windows, brought into harmony with the XVth century work of the church. The tower has been screened off to form a choir vestry, the screen being formed out of some old oak panelling found in the church. A new oak screen, to form a sacristry and entrance to the chancel, has been been erected at the east end of the north aisle. All the old walls have been restored, no rebuilding having been done except where entire disintegration had taken place, and, in all instances, the ancient characteristics of the work have been faithfully copied. The church has been enriched by several memorial gifts. Mrs. Wm. Jones has erected a stained-glass window, in the east end of the church, in memory of her husband, the patron of the living. It represents the Crucifixion of the Redeemer, in the two outer lights being inserted figures of the Virgin and St. John. The canopy work is copied from a window still existing in Evreux Cathedral, erected in 1402. Mr. J. H. Crane, of Okehampton, and members of his family have given a new altar and reredos, carved in oak, the back panels being filled with tapestry.—*Worcester Herald.*

RESTORATION OF THE PARISH CHURCH, EAGLE.—The reopening of the nave, chancel, and aisle of the Parish Church, Eagle, took place recently. The nave erected is an exact replica of the old Norman architecture. The tower, which is Early English, is left intact. The treatment of the whole edifice, with the exception of the arcade, is Free Perpendicular, and the roofs are of English oak, while the floor is made of Hopton wood. The east window is by Messrs. Heaton, Butler, and Bayne. In the course of the restoration some Saxon work was brought to light, including the remains of a Saxon cross and Norman bases, which have been reproduced in the new fabric. The restoration was carried out, under the superintendence of Mr. J. T. Lee, architect, London, by Messrs. Bowman and Son, Stamford, at a cost of 1,685*l.*

RESTORATION OF BREADSALL CHURCH, DERBYSHIRE.—The first portion of the restoration work, in connexion with All Saints' Church, Breadsall, has been completed. The roof of the edifice has been retimbered with English oak, and the foundations have been underpinned with blue brick and concrete. The architects were Messrs. Naylor and Sale, Derby, the contractor being Mr. A. Smith, Derby. The cost of the improvements has been 2,000*l.*

CATHOLIC CHURCH, STIRLING.—The foundation stone of the new church which is in course of erection for the Roman Catholic denomination in Stirling was laid on the 4th inst. The church is built from designs of Messrs. Pugin and Pugin. It is 134 ft. long, and from floor to ceiling will measure 55 ft. The outer walls are faced with Dumfriesshire red sandstone, while the pillars and inside dressings are of white Prudham sandstone. The baptistry projects towards the right front, the corresponding projection on the left having the stair which leads to the choir and organ gallery, which are placed over the front of the building. The sacristies are placed at the chancel end, and there are confessionals on each side of the church, with a porch on the south side.

BAPTIST CHURCH AND SCHOOLS, WAVERTREE, LIVERPOOL.—The foundation-stone of these buildings was laid on the 26th ult. The buildings are designed in Perpendicular Gothic, freely treated; the facings are in whole white flints with red dressings. The block comprises church, having four vestries, large school-room with six class-rooms opening into it by means of swivel partitions, boys' and girls' cloak-rooms, heating chamber and coal store, and the usual conveniences. The plan of both church and school is based upon the Greek Cross. The church provides accommodation for a mixed congregation of about 1,175 persons. Provision is made for future extension by means of side galleries, which can be put in without structural alteration at any time. The whole of the seating is circular on plan, so that the entire congregation directly faces the preacher. The contract was for 8,693*l.* The architects, whose design was selected in a competition, are Messrs. George Baines, and R. Palmer Baines, of London.

NEW FREE METHODIST CHURCH, SOUTH SHIELDS.—The foundation-stones of the new Free Methodist church and schools at South Shields were laid recently. The buildings will stand on a site at the corner of Birchington-avenue and Oxford-street, and the estimated cost of the work is 4,500*l.* Mr. G. R. Smith is the architect, and the contractor is Mr. W. J. Robertson.

WEST U.F. CHURCH, ALLOA, N.B.—The improvements in connexion with this church have now been completed. Messrs. Sydney Mitchell and Wilson, Edinburgh, were the architects for the work, and the cost has been between 7,000*l.* and 8,000*l.*

WESLEYAN MISSION HALL, TUNBRIDGE WELLS.—The foundation-stones were recently laid of a new Wesleyan Mission Hall in Hill-street, Tunbridge Wells. The building, which has been designed by Mr. C. H. Strange, consists of two portions, the main meeting-room in the rear, and vestries and classrooms in the front. The former will be about 42 ft. long by 26 ft. wide, and capable of seating about 200 people. The front building will contain a classroom on the upper floor, 26 ft. long by 13 ft. wide, large enough to accommodate a class or meeting of fifty persons. This room will have openings into the main meeting-room, making it available as a gallery. Beneath, on the ground floor, will be two rooms, fitted as a vestry on the one side, and a kitchen on the other, but these will be enclosed only by partitions or curtains so that, if necessary, the whole of the ground-floor space can be thrown into the meeting-room. With the addition of the gallery and ground-floor rooms, the total accommodation for a public service or meeting will be from 250 to 260 persons. The heating will be by hot-water radiators, and the lighting by electric light. The amount of the building contract is 1,172*l.*, and the contractors are Messrs. J. Jarvis and Son.

NEW WESLEYAN SUNDAY SCHOOL, HALIFAX.—The memorial-stones of a new Wesleyan Sunday school, at Halifax, were laid recently. The plans for the work have been prepared by Mr. A. G. Dalzell, architect, and the estimated cost, including site, is 6,000*l.*

NEW SUNDAY SCHOOLS, SUTTON-IN-ASHFIELD.—The new Sunday schools, which have been erected in connexion with the Wesleyan chapel, Sutton-in-Ashfield, were opened recently. The new school has a hall, which will seat 650 people; there will be, when complete, sixteen class-rooms, and, by utilising these, 800 people can be accommodated. The internal woodwork is of pitch-pine; the building is lighted by incandescent lights. The cost is 3,056*l.*, inclusive of the site, which cost 750*l.* The schools are situated in Welbeck-street, adjoining the old school. Mr. H. Harper, architect, of Nottingham, designed the building.

CHANCEL AT ORPHANAGE, BRIXHAM.—The foundation-stone has just been laid of the chancel and sanctuary of the British Seamen's Orphan Home, Brixham. The new building is to be carried out in accordance with the plans of Mr. E. Appleton, architect, of Torquay, a member of the committee, and it will be 20 ft. by 12 ft., with a small side vestry. There will be a chancel arch with screen between the school and the chancel.

SCHOOLS, NORTH SHIELDS.—The Queen Victoria Schools, North Shields, are situated in Coach-lane. Accommodation is provided for 1,350 pupils on two floors, each floor having ten class-rooms and assembly halls. The one on the first floor is 92 ft. long by 28 ft. wide. There are two cookery rooms on the third floor, accommodating fifty students each. Each class-room is fitted with dual desks, and left-hand light is obtained in every case. The first part of the school was built by Alderman Jos. Elliot, contractor, of North Shields. The new portion has been erected by Mr. Thomas Patterson, contractor, of North Shields and Whitley Bay. Mr. J. T. Heslop had the plumbing contract, and Messrs. Harding and Co., Whitley Bay, the decoration. The heating contract has been in the hands of Messrs. Emley and Sons. The electric lighting and fans were installed by Messrs. Dagman and Ryder, of North Shields. The North of England School Furnishing Co. are responsible for the furniture and fittings. The plans have been carried out by Messrs. Marshall and Tweedy, architects, Newcastle, under whose superintendence the buildings have been

erected. The plans were selected in competition some five or six years ago, when the firm was Messrs. Marshall and Dick, who designed the whole scheme.—*Newcastle Chronicle.*

WORKMEN'S DWELLINGS, SHEFFIELD.—New workmen's dwellings are to be erected on the Croft area in Sheffield. The new buildings will accommodate 322 people, and the cost is estimated at about 24,962*l.* The plans for the work have been prepared by the staff of Mr. C. F. Wike, the City Surveyor.

NEW LIBRARY, KETTERING.—The new free library at Kettering, situated in Sheep-street, was opened on the 7th ult. The structure is built of red brick, with Ketton stone windows and dressings. The contract was awarded to the Kettering Co-operative Builders, whose tender was for 7,145*l.* The architects were Messrs. Goddard and Co., of Leicester. The library is a one-floor building, with 130 ft. frontage and a depth of 85 ft.

MUNICIPAL ART GALLERY AND MUSEUM, BRISTOL.—A new block of buildings has been erected in Queen's-road, Bristol, to serve for the double purpose of a municipal art gallery and an extension to the museum. The work has been carried out by Messrs. W. Cowlin and Son, Bristol, from plans prepared by Mr. Frank Wills, architect.

ASYLUM AT BANGOUR, EDINBURGH.—A meeting of the Edinburgh Lunacy Board was held on the 23rd ult., at which a report by Dr. Keay on the accommodation to be provided in the eight additional homes for patients at Bangour was submitted. Dr. Keay stated that the five wood and iron villas already built would eventually accommodate 225 male patients of the quiet and easily managed class, with the staff required to look after them. It was expected that they would be chiefly employed on the farm and in the garden and grounds of the institution. The architect had in preparation plans for four homes, providing accommodation of a similar kind for quiet, easily managed, female patients. In these industrial homes they should have accommodation for 415 patients—225 males and 190 females—of the quietest, most trustworthy, and most easily managed class. It could not be expected, however, that all, or nearly all, the patients who would be sent would be quiet and easily managed. He would, therefore, recommend that the remaining four houses, making up the eight which it had been resolved to build, should be designed to accommodate these troublesome patients. Two of the houses would be for male patients and two for females, and they would accommodate seventy-two of each sex. If the arrangement was carried out as proposed there would be accommodation for 337 males and 302 females, a total of 639 patients. The report was approved, and plans prepared by Mr. Blanc of the four homes were remitted to the Building Committee.—*Glasgow Herald.*

MESSRS. BROADWOOD'S NEW PREMISES.—In connexion with Messrs. Broadwood's new show-rooms in what was formerly Limmer's Hotel, which were mentioned in a Note in one of our recent issues, we may here add that the extensive structural alterations and the decoration of the premises were carried out from the plans and under the supervision of Mr. H. Tanner, jun., by Messrs. Patman and Fotheringham. The hot water fittings were carried out by Messrs. Mitchell and Co.: the lifts by Messrs. Richmond and Co., and the electric wiring by Messrs. Rashleigh Phipps and Co. Mr. Thomas was the clerk of works.

WORKMEN'S DWELLINGS, HELENSBURGH, N.B.—New workmen's dwellings have been erected in Maitland-street, Helensburgh. The new buildings consist of an east block and a west block, each of four stories, and attics, and each contains about twenty separate dwellings. There are ten one-apartment, twenty-three two-apartment, and ten three-apartment houses in all, and those above the ground-level are entered from balconies, which are reached by steel and concrete bridges from the staircase block, which block contains two staircases. In addition there are wash-houses, water-closets, a creche, and caretaker's house on the ground floor, and there is also a hall (capable of seating 100 persons) and committee-room in the back block. Messrs. John Burnet and Son, architects, Glasgow, prepared the plans for the work.

NEW CLUBHOUSE, CRAIL, N.B.—A new clubhouse is now in course of erection at Balcomie Links, Crail. The work is being carried out from the designs of Messrs. John and T. W. Currie, architects, of Elie, at a cost of 700*l.*

NEW POST OFFICE AND LIFEBOAT HOUSE, LLANDUDNO.—On the 20th ult. the new post office at Llandudno was opened. The premises are situated in the main thoroughfare from the railway station to Mostyn-street and the Parade, and stand on a site 150 ft. long by 45 ft. wide. The elevation to Vaughan-street is treated in a free Renaissance style in golden buff terra-cotta, from Mr. J. C. Edwards' works at Ruabon, with teak doors and windows. The main entrance, through a teak-wood vestibule, leads into a large public office, fitted up with horseshoe counter, writing spaces, telephone box, etc. This part has a Minton-Hollins glazed tile dado all round, with tile floor to the public space, and wood floor behind the counter. Behind the public office is a sorting office, and between the public office and sorting office is a special enclosure where registered letters are dealt with, and on a raised level, commanding the whole of the ground floor, through glazed screens, is the chief clerk's office. At one corner of the sorting office is a room for messenger boys, and, in the rear thereof, bicycle-house, truck-shed, etc. In the basement is the boiler-house, by which the premises are heated on the low-pressure hot-water system. Approached by two separate staircases from the rear of the sorting office are two common rooms for men clerks and postmen. There is a private entrance for staff, and a staircase connecting the different floors. On the same day the new lifeboat house in Lloyd-street, Llandudno, was opened. The building has been erected of limestone, and has a timbered slated roof. Both buildings are from the plans of Mr. G. A. Humphreys, architect, Llandudno.

NEW LIBRARY, BARNET.—The new library at Barnet, which has been erected in connexion with the Hyde Institute, was opened recently. The new building has been erected in the Renaissance style, and has a frontage of 46 ft., the walls being 20 in. thick. The flooring is of oaken cubes, diagonally laid. The plans of the building were prepared by Mr. T. G. Jackson, R.A., and most of the work was carried out by Messrs. Shillito, contractors.

GOLF CLUB HOUSE, BANGOR.—The new golf club house at Bangor was opened recently. The building has been erected at a cost exceeding 1,000*l.* from the plans of Mr. Ernest L. Woods, C.E., Bangor. Messrs. J. and R. Thompson, of Dublin and Belfast, were the general contractors for the work, the plumbing and gasfitting being carried out by Mr. W. Morrow, Bangor.

EXTENSIONS TO THE SANATORIUM, ST. HELENS.—The new extensions to the St. Helens Corporation Sanatorium, at Peasley-cross, were opened on the 26th ult. The enlargements consist of a large pavilion, a small pavilion, a discharging ward, a new mortuary, and sixteen additional bedrooms, the total area now covered being 5a. 3r. 36p. The total cost of the extensions has been 8,750*l.*, and the work has been carried out under the supervision of the Borough Engineer, Mr. G. J. C. Broom, M.Inst.C.E.

READING AND RECREATION ROOMS, BELFAST.—The opening of the new recreation and reading rooms in Northumberland-street, Belfast, took place recently. The new building has been erected from the designs of Mr. W. J. Fennell, architect, and the general contractor was Mr. G. Callen. The plumbing work was entrusted to Messrs. Riddel, Ltd., Belfast; Mr. John I. Law carried out the gas-fitting; and the heating arrangements have been fitted by Messrs. Musgrave and Co.

STAINED GLASS AND DECORATION.

STAINED GLASS WINDOW, CHRIST CHURCH, BELFAST.—This church was recently reopened after having been renovated and repaired. The improvements carried out consist of general repairs, painting, and decoration of the interior. A new stained-glass memorial window, representing the women at the tomb, as recorded by St. Mark, has been placed in the edifice. Messrs. Heaton, Butler, and Bayne, stained-glass artists, of London, executed the work.

SANITARY AND ENGINEERING NEWS.

PROPOSED TUNNEL UNDER THE ELBE.—It is stated that the Hamburg Senate proposes to arrange for the construction of a tunnel under the Elbe. The Clyde tunnel at Glasgow has been taken as a model for this plan. It is intended that the tunnel shall run from the St. Pauli landing-place on the north bank of the river to the Steinwarder bathing establishment on the southern bank. It is proposed that two tunnels of 4·8 mètres internal diameter shall run beneath the river at the two points named, and passengers be conveyed by means of a lift at each extremity of the tunnel. The lifts are to be built to convey twenty, eighty, and one hundred and twenty persons respectively. The time of building is estimated at about from two to three years. It is proposed to collect a small charge upon persons and vehicles making use of the tunnel, with the object of eventually covering the cost of construction and working expenses.

AIR-INLET FOR DRAINS.—A sheet, describing and illustrating a new patent air-inlet for drains, has been sent us by Messrs. Thomas Crapper and Co. Instead of the usual mica flaps, a copper dome is used, to which a sheet-copper counterweight is attached in such a manner as to hang immediately over the opening into the ventilating pipe. External pressure of air is said to open the valve, and internal pressure to close it; but the illustrations do not show clearly how this is effected. The satisfactory working of the inlet depends, to a large extent, on the nice adjustment of the weights of the dome and counterweight.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. R. L. Curtis and Sons, surveyors, have removed their offices from 119 and 120, London-wall, to 11 and 12, Finsbury-square, E.C.——Banks' Fireproof Construction Co. is now known as "Banks' Helical Fireproofing System, Limited."

POLAND AND LITHUANIA.—Reporting on the trade and commerce of these countries for the year 1903, Mr. Consul-General Murray writes from Warsaw that for the preceding two or three years, owing to general depression, little building was done, but last year better times and the wants of the growing population of the towns led to a considerable revival in the building trade. This has had a very good effect, not only on the iron industry, but also on the prices of cement and bricks, and in providing occupation for a large number of artisans and labourers, who otherwise would be hard put to it to find work. The cement syndicate of Poland, started in 1900, was wound up towards the end of 1903, the immediate result of which was a considerable increase in the consumption of that article, owing to the fall of prices from 2r. 75c. to 2r. per barrel of ten pouds (360lb.). The united works of Poland sold in 1902 some 460,000 barrels, whereas in 1903 this figure rose to nearly 1,000,000 barrels, but this rise had no beneficial effect on the industry from the financial point of view, the large output and consequent cheaper production being more than counterbalanced by low prices. The German import of cement during 1903 was practically nil, as competition was out of the question at such low prices, after payment of a duty of about 1r. 50c. per barrel of ten pouds. "If, therefore" (comments Mr. Murray), "German cement cannot compete with the local article it would be all the more difficult for the United Kingdom to find a market in this part of Russia, even were it shipped to Dantzig, and from there by river to Warsaw. The industry must consequently be looked upon as purely local, and can only be of indirect concern to Englishmen interested in this country as giving an idea of the prosperity of trade and industry, the prosperity of the cement industry going hand in hand with the general prosperity of the country." The report goes on to say that the general depression which prevailed for the last four years, and consequent small amount of building carried out, brought down the demand for bricks and building materials to such a low figure that most of the brickfields in Poland, which had sprung up like mushrooms during the previous building fever, had to close again, and but few found it worth while to keep working. In 1903, however, came a renewal of building at Warsaw, which, competition being less, raised the price of bricks again, which stood at from 1*l.* 6s. 6d. to 1*l.* 9s. 6d. per thousand throughout the year, though prices fell off a couple of shillings towards the close. This year (1904) was expected to be an exceptionally good year, as much building was intended, but the war has in this, as in everything else, rendered credit difficult, and much of the proposed construction has been temporarily abandoned. The year 1903 was a good one for the timber trade, which had been in a bad way for the three preceding years. Prices ruled high both in Poland and Lithuania. The export of all sorts of wood for consumption in Germany is increasing, but the demand for wood (especially oak) from this district for the United Kingdom and France is diminishing on account of American competition.

GERMAN CEMENT TRADE.—This subject is dealt with at some length in the annual report of the British Consul-General, from which we gather that, after many fruitless endeavours, a "Sales Union," of fourteen cement works in Rhenish Wesphalia, was formed in December, 1903, and this was followed by the establishment, in January, 1904, of the South German Cement Syndicate, with branch offices at Heidelberg, Würzburg, Stuttgart, Metz, and

Munich. The Rhenish-Westphalian Syndicate was formed (as a company with limited liability) on condition that a similar contract should be entered into with the South German Cement Works. The extent to which "members" (Gesellschafter) participate, is determined according to their productive capacity, that is to say, one share is allotted to each member for every 1,000 casks of annual production. The aggregate capacity of the fourteen works amounts to about 4,370,000 casks of 170 kilos. per cask, of which 2,337,000 casks were sold in 1902, and 1,181,222 casks in the first six months of 1903. The members bind themselves to sell cement only as agents of the syndicate, that is to say, to bring cement into commerce neither in their own name nor in the name of others, to deposit 1*l.* 5s. in cash for each share as working capital, and 2*l.* 10s. in bills for each share as security. Sales are effected exclusively through the sale office of the company. The syndicate does not sell any cement in its own name. When a member has sold 40 per cent. of his quota, further sales by him can only be effected on condition that the syndicate is empowered to substitute the particular brand sold by that of some other member of the syndicate. The syndicate collects the invoices. Members receive as agency commission whatever they succeed in obtaining for their own brand over and above the purchase price fixed by the syndicate. The price which the syndicate grants to the separate members (calculation price) is fixed every year before October 1 for the following business year. Settlement is effected at the end of the business year, and any surplus is divided among the members in accordance with their shares in the syndicate. If a member has sold less than 25 per cent. of his quota, or if a member, through his own fault, is in arrear with his deliveries, he loses one share of the profit for each 10,000 casks less sold or delivered by him. The organisation of the syndicate comprises the sale office, the committee of management, and the meeting of the members. For the present the export trade is not included in the contract, but while members are permitted to export on their own account and in their own name, they are bound to announce the quantity sold to the sale office. A tax of 5s. for every ton exported is levied by the syndicate. Taking the average of seventy-five cement works, the sale price per cask (170 kilos., exclusive of packing) receded in the year 1902, on account of the severe competition, to 3m. 62pf., compared with 4m. 44pf. in 1901, 5m. 35pf. in 1900, and 5m. 46pf. in 1899. Sixty-five cement factories were working in 1902, with an aggregate capital of 6,933,500*l.*, and 2,500,000*l.* consolidated debts; some works had reserve funds, the majority, however, large book debts. According to particulars issued by a number of works, their sales in 1902 averaged about 60 per cent. of their productive capacity, so that there was at least a slight improvement over the preceding year, in which the average was only 46 per cent. How unremunerative the works were may be judged by the fact that only twenty-eight out of sixty-five made profits amounting, in the aggregate, to 297,000*l.*, while the remainder had deficiencies totalling 215,500*l.*, and nineteen out of these thirty-seven factories had been working at a loss, although fifteen of the whole sixty-five had already undergone financial reorganisation. The dividends of those companies, which were in a position to distribute them, varied between 1 and 15 per cent.. In the year 1900, dividends of, and exceeding, 6 per cent. were distributed by thirty-six companies, in 1902 only by seven; dividends of less than 6 per cent. were distributed by only eleven companies in the year 1900, but by sixteen companies in 1902. In 1900 only fifteen companies were unable to pay a dividend; in 1902, forty-three companies were in that position. Most of the works commenced business in 1903 with diminished stocks and increasing employment. The foreign trade, which has considerably increased in recent years, is still on too small a scale to balance in any degree the disproportion between the capacity of production and the home consumption. Last year the producing capacity was about 30,000,000 casks, but hardly more than 20,000,000 casks were absorbed by the market, and it is obvious that an exportation which does not amount to quite 750,000 tons, or, approximately, 4,500,000 casks, is too insignificant to be of any importance. The cement industry of Upper Silesia showed better returns as to employment, but an increase of prices was not possible on account of the severe competition.

HOUSING IMPROVEMENT AND TRANSFERABLE BUILDING LEASES IN GERMANY.—The German Government (according to a recent report by Mr. Consul-General Schwabach) has prepared a Bill to promote the erection of small dwellings, which are to be unimpeachable from sanitary, moral, and social points of view, and, at the same time, obtainable at a reasonably low rent. One of the greatest obstacles in this connexion is the speculation in land, and in order to counteract this to the utmost extent it is proposed to render it incumbent upon urban and rural communal authorities to lay out and build streets, and parts thereof, whenever and wherever there is a need for dwellings. To encourage private builders to erect houses with healthy and suitably arranged apartments they are to be granted certain facilities in contributing towards the cost of street and road building, and it is intended to set aside any legal hindrances which may exist against granting such builders further advantages as regards reduction of drainage and water rates, building licences, &c. Such privileges are to be accorded to joint stock companies, associations, and limited liability companies proposing to erect houses with small dwellings, without seeking to obtain a larger than the ordinary local rate of interest on the capital invested. In communes with more than 10,000 inhabitants special police regulations are to be issued for the use of living and sleeping rooms. Only such rooms may be used for living or sleeping as are approved as such by the police authorities, and these rooms must contain at least 10 cubic mètres of space and 4 square mètres superficial area for every inhabitant over ten years of age. A large number of other detailed regulations are intended to promote sanitation and morality. It will be the duty of the communes to carry out the supervision of dwellings, while in towns with 100,000 or more inhabitants a special housing office ("Wohnungsant") is to be established. The Imperial Ministry of the Interior, which has already frequently granted building credit at low rates to mutual building societies, has lately purchased a building block of 8,200 square mètres from the Saxon fiscal authorities for 12,000*l.*, which it has assigned to the Dresden Savings and Building Society as a transferable building lease. The four-storied buildings to be erected upon it will contain 300 dwellings, each comprising one to two rooms, a pantry, kitchen, and offices. On the ground floor there is a kindergarten for the children of the tenants, and for the social needs of the adults there will be provided in the basement a club room, with library and reading-room, baths, wash kitchen, and laundry. Each "Wohnung" or set of apartments will have a superficial area of from 38 to 65 square mètres at an annual rent of, approximately, 5s. 6d. per square mètre. During the continuation of the lease, which has been concluded for a term of eighty years, the association pays the Imperial fiscal authorities interest amounting to 288*l.* 10s. per annum for the building plot. It is stipulated that the dwellings are to be let only to workmen, small tradesmen, and lower-grade civil servants, or persons on a social footing with these. Factory premises or workshops may only be erected by special permission, whereas licensed victuallers and the sale of spirituous liquors are prohibited. The rental for the dwellings may not exceed the amount necessary for the interest and amortisation of the capital expended in building the houses and their management and maintenance. A similar contract has been made between the Prussian fiscal authorities and the Civil Servants' Building Society in Berlin, and for the present a plot of fifty acres at Dahlem, near Berlin, has been singled out for the erection of transferable leasehold houses. This contract is for a term of seventy years, and stipulates that factory premises, or other industrial plant causing noise, smoke, or smell, may not be erected at all, and restaurants or public-houses only with the special permission of the authorities, who undertake the laying out of the streets. The association pays the authorities interest at the rate of two per cent. per annum on the value of the plot, which has been fixed at 7s. 6d. per square mètre, the said plot being available only for the erection of houses. Dwellings or sets of more than four apartments may not be erected as single habitations, but only as parts or sections of buildings.

FIBRE TILES.—The Canadian Commercial Agent for New South Wales, Queensland, and New Zealand, in a report to the Department of Trade and Commerce, writes:—"In the cities what is known in the trade as 'French tile' is used for roofing. I have had an inquiry whether a tile is not, or could not be, made of paper pulp that would take the place of the French tile. It may be that, if consideration is given to it, such a tile could be produced by a process somewhat akin to that used in making indurated fibreware. The objection to the French tile is its tendency to absorb moisture, thus increasing its original weight and creating a growth of vegetation that speedily discolours it. A fibre tile would be much lighter, be moisture-proof, preserve its colour better, be less liable to break than either slate or tile, suffer less from expansion and contractions through variation in temperature, and be free from the rattle in a storm characteristic of metal. Could a fibre tile be produced at a moderate cost, there would be a large demand for it in Australia."

BUCCLEUCH HOUSE, RICHMOND.—This fine old house, of the Georgian period, is offered for sale by its present owner, Sir John Whitaker Ellis, Bart., who is about to leave the neighbourhood. The house had latterly been a residence of the Dukes of Buccleuch, and, with its beautiful gardens, and lawn that extends to the bank of the Thames, forms a well-known feature of the river-side just above Richmond Bridge.

REBUILDING IN UPPER THAMES-STREET, E.C.—A site has been cleared on the south side of the street between Broken Wharf and Castle-yard for Messrs. Lever Brothers' new premises, to be erected after plans and designs prepared by the late Mr. F. W. Tasker. The place "is so-called"—says Stow—"of being broken and fallen down into the Thames," and there formerly stood the inn, or town-house of the Bigods and Mowbrays, Earls and Dukes of Norfolk, as well as the engine, which was worked by horse-power, and the water-house set up in 1594 by Bevis Bulmer for supplying that part of London with water raised from the Thames. Bulmer's water-works are depicted in the rare panoramic view, 1610, by Nicholas John Visscher of the river-side, of which an original print is preserved in the King's collection of maps and drawings in the British Museum.

GREEK MARBLE TRADE.—According to the annual report sent to the Foreign office by Mr. Consul Walsh, the British Company, Marmor, Limited, is now pushing the marble trade of the Piræus with vigour, and has acquired most of the more important marble quarries in Greece, including those of the late "Greek Marble Company," at Naxos, Antiparos, and Paros, where lay the quarries of the famous white statuary marble, called "lychnite." This company sent last year to its various markets abroad the not inconsiderable amount of 1,175,238 cubic metres (about 1,537,500 cubic yds.) of different marbles. In addition to the export, there is a good market in the country itself for the white marble, not of the first quality, and the blue Melana marble, of Pentelicus, for building purposes. In this connexion, it is, perhaps, worth mentioning that building blocks of marble, which are specially cut so as to be easily adapted to balconies, window and door frames, etc., form one of the latest developments at these quarries. Great hopes are entertained of the development of the market in the United States of America, where the demand for Greek marble is increasing. The output of the quarries belonging to Marmor, Limited, in 1903, was 5,104,351 cubic metres. By far the larger portion exported went to Germany. The shipments to London were 62,359 cubic metres of Pentelicus marble, 4,564 cubic metres of Styra, and 307 cubic metres of Tinos; 920 cubic metres of Pentelicus marble were also sent to Bristol.

JAVA TEAK.—Mr. Consul Fraser reports to the British Foreign Office that the output of Java teak (*Tectona grandis*) during the year 1903 was most unsatisfactory. This was principally caused by the scarcity of labour, the large rice crop enabling numbers of regular wood-cutters to remain in their villages without working until their supply of rice was consumed. The year was also an abnormally wet one, and, therefore, not in favour of the output, which is estimated at about 3,531,600 cubic ft., as against about 5,650,000 cubic ft. in 1902, and 4,944,000 cubic ft. in 1901. About 353,000 cubic ft. were shipped to South Africa in the form of railway sleepers; the balance was exported as squares, logs, sawn wood, etc., to Europe—chiefly to the Netherlands and the United Kingdom. A few small parcels were shipped to China, and during the last few months of the year regular shipments of from 10,000 to 14,000 cubic ft. were made to Bombay. It would appear that British India promises to be a good market for Java teak. According to the latest official returns, the area of the teak forests in Java at the end of 1900 was 265,175 acres, of which 12,140 acres have been planted by the Netherlands Indian Government, the remainder being of natural growth. The average production of wood per acre may be taken as about 2,825 cubic ft.

ROYSTON CEMENT AND BRICK WORKS.—At the Mart, Tokenhouse-yard, on May 31, Messrs. Fuller, Horsey, Sons, and Cassell offered for sale by auction the freehold property, known as the Royston Cement and Brick Works, situate at Barrington, near Cambridge, about a mile from Shepreth station, on the G.N.R., to which there is a siding. The works occupy, with the farm lands adjoining, a total ground area of about 230a. 2r. 35p., and underlying the estate it is claimed that there are prac-

tically inexhaustible deposits of cement, marl, and gault clay, suitable for the production of high-class Portland cement and best white facing bricks. Erected on the property (according to the particulars furnished by the auctioneers) are substantial brick buildings, forming the cement and brick works, fitted with modern, fixed plant, machinery, and fixtures, equal to an output of about 300 tons of cement and lime, and 100,000 white facing and gault bricks per week. Included in the lot were also a manager's dwelling-house, offices, mechanics' shops, and stores attached to the works; also a farmhouse and outbuildings, cottages, orchard, barn, etc., let, with the available surface land, at rentals amounting in the aggregate to 170*l.* per annum. It was explained that the entire estate was held in fee simple, subject to annual corn rents amounting to about 35*l.* 10*s.* The vendors were prepared to give possession of the property on completion of the purchase, and it was suggested by the acting auctioneer that, if a few thousand pounds were spent on necessary repairs, the estate would be worth upwards of 50,000*l.*, though, as it was desired to sell in order to close up certain transactions, a much less sum would be accepted. The first offer made was 12,000*l.*, and this was increased by bids of 500*l.* each to 15,500*l.* As no advance was forthcoming, it was announced that the property was withdrawn; but an intimation was given that for 20,000*l.*, or perhaps a little less, the lot could be secured by private treaty.

WHISTLER'S PEACOCK ROOM.—The famous Peacock Room, which Whistler designed for the late F. R. Leyland, in Prince's Gate, was recently placed in the hands of Messrs. Ernest Brown and Phillips, of the Leicester Galleries, for disposal, and has been purchased from them by Messrs. Obach and Co., who will, in a few days, exhibit it to the public in their rooms in New Bond-street. The removal of this work of art at first appeared most difficult, but on examination it was found that the decoration was separated from the actual structure of the room, and it has been removed and re-erected by skilful workmen in a most complete manner. The public will now have an opportunity of seeing the room exactly as originally designed.

THE ROMAN TOWN UNEARTHED IN DERBYSHIRE.—The results of the recent excavations at the Roman fort of Brough, about midway between Bradwell and Hope, conducted by Mr. John Garstang, of Liverpool University College, are stated, with some details, in the Journal of the Derbyshire Archæological Society. It is considered established that Brough was the Roman station Anavio. The fort, as roughly defined by the excavations, is nearly a regular four-sided and walled enclosure, about 336 ft. inside length and 275 ft. broad, with corners rounded to a curve, and an arched gateway at each side, protected by flanking towers. The most important structure within the walls was the prætorium. The feature in which the greatest public interest is taken is the underground chamber, containing a well. During the excavation there were found numerous stones, animal bones, horns of the deer family, and of oxen, a few small coins of the IVth century, three fragments of a IInd century tablet, two Roman altars, a broken column, a large stone vessel, fragments of pottery, and certain smaller objects. While excavating the chamber, four fragments of a large inscribed tablet were discovered. The inscription tells of the work effected by the commander of Cohort I. of Aquitanians at a time when Julius Verus governed Britain, and Antoninus Pius was Emperor, about the middle of the IInd century. These fragments were all found in the pit or well within the prætorium, and, it is reasonable to believe, that the tablet itself was erected in the same vicinity to commemorate the completion of some work, possibly the building of the fort itself. Perhaps the point of greatest local interest is the name of the cohort, Cohors I. Aqvitanorvm. It is not suggested that this was a detachment specially detailed for engineering work. One of the altars found bears the words "Deo Marti," indicating its dedication to Mars. The objects found are being exhibited at the Buxton Museum. Mr. F. Haverfield (Oxford) has made some notes on the inscription on the tablet, which, he says, may be taken as showing that the fort at Brough was built, or repaired, or at least occupied about A.D. 158, and was apparently rebuilt later. Melandra Castle, near Glossop, with coins of Domitian, Marcus, Julia Mæsa, and Severus, may have been occupied during the same period as Brough. Slack, near Huddersfield, with coins of Nero to Hadrian, may have been both occupied and abandoned sooner. Templeborough, near Rotherham, may have also dropped out of military use before the end of the IInd century.—*Manchester Guardian.*

Legal.

ACTION AGAINST BUILDERS FOR TRESPASS.

THE case of Ward *v.* Swain and others came before Mr. Justice Darling and a common jury in the King's Bench Division on the 31st ultimo—an action by the plaintiff, a general dealer of Tooting, to recover from the defendants, Messrs. Swain and Selby, builders, Mr. Coulson, a contractor, and Mr. Johnson, a man working under the contractor, damages for alleged trespass.

Mr. Biron and Mr. Doughty appeared for the plaintiff, and Mr. Ricketts for the defendants.

Mr. Biron, in opening the case, said the claim was by the plaintiff for damages in respect of a trespass which took place under the following circumstances. The plaintiff was a man who had for some years carried on business in the neighbourhood of Tooting as a general dealer, and he also combined with that farming. In August, 1902, plaintiff obtained the tenancy of a house and land, called Bygrove House, Tooting—a tumble-down old building which had been allowed to fall into disrepair. The house and land, however, suited the plaintiff, and he had it upon an agreement by which he could be compelled to give up possession on a month's notice. The plaintiff held the house and land from the Heaver trustees, who were anxious to sell for the purpose of developing for building. The trustees entered into a contract to sell to Messrs. Swain and Selby, but they forgot to give his client a month's notice. In February of this year, the defendants came on to the plaintiff's land and, without leave or licence, committed the acts of trespass complained of—viz., damaging the fences, and cutting down trees, etc.

His lordship asked what the defence was.

Mr. Ricketts said that the defence was that defendants had leave and licence to go upon the land, and, further, that the plaintiff had notice to give up possession.

The plaintiff, in his evidence, said that on February 17, he gave the defendants leave to deposit some scaffolding poles on the ground, Messrs. Swain and Selby stating that they had bought the land for building purposes. Plaintiff said this was news to him, as he had received no notice to quit. Later in the day, the defendants, without leave, broke down one of his fences, and put some scaffolding on the land. On February 18, defendants burnt the bushes and pulled down the trees on the land, and erected a carpenter's shop in the orchard. On February 25 an interim injunction was granted restraining the defendants from interfering with the land during his tenancy.

For the defence, Mr. Harry Coulson stated that at no time did the plaintiff make any protest against what they did. In fact, the plaintiff gave permission for the scaffolding, etc., to be placed on the land.

In the result the jury awarded the plaintiff 25*l.* damages.

Judgment accordingly.

THE LIABILITY FOR DEFECTIVE DRAINS.

AT the West London Police Court recently, there was a summons against Mrs. Nunn, of Binfield-road, Clapham, in respect of an alleged defective drain at 45, Melrose-gardens, West Kensington. Mr. A. B. Watson supported the summons on behalf of the Hammersmith Borough Council; and Mr. Stuart Bevan, barrister, represented the defendant. Complaint was received from the occupier of the house about bad smells, and the sanitary inspector made a test and found a leakage. Notice was then served on the owner containing a detailed account of the work necessary to be done to remedy the defect. Mr. Watson pointed out that the owner had not availed herself of the right of appeal to the London County Council, as provided in section 211 of the Metropolis Management Act, and, therefore, according to the decision laid down in "Clerkenwell Vestry *v.* Feary," the only question for the magistrate to decide was whether the notice was properly made out and served. Mr. Stuart Bevan contended that, inasmuch as the requirements set out in the notice really amounted to a reconstruction of the whole drainage system in the house, the question of the validity of the notice was quite within the province of the magistrate. The requirements, continued learned counsel, were precisely similar to those established under the London County Council's regulations of 1901; and, as the latter only applied to new buildings, the Borough Council were clearly endeavouring to put on the owner an obligation that was not even imposed by the London County Council. The Borough Council could, if the drains were irreparable, have instituted proceedings under the Public Health (London) Act in respect of a nuisance. Mr. Rose decided, on the point of law, that the notice was a construction notice, and, therefore, liable to revision at his hands; and, after hearing evidence, he held that the notice was invalid, and dismissed the summons.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

10,005 of 1903.—E. F. CLARKE: *Burners for Gas Stoves, and other similar purposes.*

According to this invention the area of the orifice through which the gas is injected into the mixing chamber or tube is capable of being varied from that necessary to pass the maximum quantity of gas required; for example, by a stove of the maximum heating capacity to that required for a stove of the smallest capacity, or to a complete closure of the orifice so that thus the flame is capable of being regulated with precision to the extent required to ensure perfect combustion and the highest efficiency. According to the invention, also a movable member is mounted upon the gas inlet pipe, and means are provided for regulating the position of this member with reference to the gas inlet pipe to vary the quantity of gas passing into the mixing tube or chamber. This member advantageously consists of a valve-stem, adapted to enter the gas inlet pipe to any required extent, so as partially or wholly to close it, and this valve stem may be provided with a tapered extremity, or, as is preferable, with a number of inclined faces, by means of which the annular space between the valve-stem and the gas inlet pipe orifice, or the space between the inclined faces on the valve-stem, and the gas inlet pipe orifice, is adjusted in area, and thus admits a greater or less quantity of gas as may be required according to the size and capacity of the stove, and according to the height and extent of flame required.

10,013 of 1903.—A. GOLIGHTLY: *A Safety Support for Window Cleaners, and others.*

A safety support for the use of window cleaners, and others, consisting essentially of two bars held parallel with one another by crossbars, one end of each of the said parallel bars being upturned and returned; rings at the ends of the bars opposite to the upturned ends; a bar to slip through the said rings and of greater length than the probable greatest width of the window opening, in connexion with which the support is likely to be used: runners free to slide on the parallel bars near the upturned ends of the said bars; a hanger to each runner, and having a projecting and somewhat upwardly-inclined arm, the free end of which is bifurcated; a pin upstanding from each runner, and a platform having holes to put over the said pins.

10,891 of 1903.—J. C. SELLARS: *Moulding Bricks, Blocks, and other articles.*

According to the invention, a base-plate or support is provided, to which are attached a plurality of parallel or substantially parallel plates or partitions, at any desired distance apart; and at the end of same, and at right-angles thereto, a removable board or boards or plates which board or boards or plates are adapted to rest on or against the parallel plates or partitions. The ends of the plurality of moulds so formed are closed by means of a plate which is adapted to move up to, and close the moulds during the moulding operation, and be removed when the moulding of the articles is completed, and it is required to eject them. This end plate, may, in some cases, be hinged or pivoted to the base-plate or support, and swung into and out of position as desired (a suitable stop or stoppers being provided to retain it when in position for moulding), or the plate may slide in grooves provided on the base-plate for this purpose. The side of the mould or moulds is removable, as stated, and comprises (when ornamentations or patterns are to be imparted to the articles being moulded), two movable boards or plates, preferably of wood, the inner board, *i.e.*, the board next to the row of moulds and having the patterns on it, being drawn back and away from the parallel partitions after the moulding operation is completed, and it is required to eject the moulded articles.

11,075 of 1903.—O. DIETRICHKEIT: *Iron Insertions for Cement or Beton Ceilings, Floors, and Roofing.*

Flat-iron insertions for concrete ceilings and roofing of great supporting power, and having

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

a large supporting surface for concrete, thus avoiding the danger of the latter being cut through, characterised by the flat-iron throughout its length—between the ends bent in the well-known manner round the cross-iron situated on the well—being twisted round its own axis into a spiral shape as often as required, so that its cross-section continues to be brought into different positions, and invariably in the same direction of twist.

13,057 of 1903.—H. C. WEBB and A. A. WEBB: *Bath-water Systems of Private Dwelling-houses.*

A bath-water system, supplying a bath from a clothes-boiling furnace or copper, or the like, which consists in providing means for closing the open top of the furnace or copper water-tight or airtight, and arranging in conjunction with this closing, water, air, or steam-pressure supply, by which the water in the furnace can be forced or made to flow out of the furnace into the bath.

15,283 of 1903.—W. MEAKIN: *Windows.*

According to this invention, the slides and the slide rails of the sashes are cross rebated, and to effect this economically, the machine-moulded lengths of wood are prepared with a groove on their contiguous faces of a depth equal to the intended rebate. At the pivot, the full width of the rail is cut away to this depth, and replaced by a metal piece strengthening it, and forming also a bearing for the pivot. The rebates above and below the pivot are then readily formed by cutting away the wood to the right or left of the groove provided.

17,366 of 1903.—A. CLARK: *Folding or Collapsible Gates, Window Guards, and the like.*

The invention consists in a form of collapsible frame, in which a series of horizontal members are guided by vertical posts and connected together by links forming a lazy tongs arrangement, having balance weights provided if necessary to facilitate the raising or lowering of the frame. In carrying the invention into effect, according to one form, the vertical guide-posts are formed of T-section, the horizontal sliding members consisting of two bars riveted together with distance pieces between them. Two or more of these horizontal members are provided with a roller at each end, which rollers work on the guide-posts. The connecting links are pivoted to the horizontal bars at the centres of the former, the ends of the connecting links being provided with pins adapted to work in horizontal slots in the sliding bars. By means of these links the horizontal members are kept parallel and equidistant.

17,673 of 1903.—THE COALBROOKDALE COMPANY, LTD., and D. SINCLAIR: *Fireplaces.*

A fireplace, consisting in the combination with a fire basket of a canopy or sliding shutter, and a back brick projecting forward almost, or quite to, the canopy or sliding shutter, and having a series of holes or notches cut through the upper part for the escape of the gases whereby the residual heat of these gases is largely taken up by the brickwork and radiated into the room.

26,737 of 1903.—F. HARPER and A. DOMAN: *Hinges.*

Hinges, characterised by the top and bottom sockets being attached to, or forming part of, a back plate, which is so slotted that the strap and pins are secured thereto with the back of the strap knuckle working flush with the back of the plate.

5,371 of 1904.—C. A. SOUTHWICK: *Automatic Controllers for Return Traps of Heating Apparatus.*

In a heating apparatus having a steam generator, means, including a return trap, to return condensation water to the generator, a receiver in which such water collects, and an inlet for the trap, communicating with the receiver, the construction, arrangement, and use of means to control automatically the speed of operation of the trap in accordance with the rate of accumulation of the condensation water in the receiver.

5,651 of 1904.—G. BARKER (C. H. Phillips): *Apparatus for Flushing Water-closets, Supplying Domestic Boilers, and other similar purposes.*

This consists in the combination with a tank having an outlet, of an inlet valve, and automatic means for opening the inlet valve when the tank is emptied, and closing the inlet valve when the tank is filled, comprising an open receptacle for water which is filled and emptied in the operation of such means, the capacity of which receptacle is such that when filled it will exert an excessive valve-closing pressure on the inlet valve.

7,035 of 1904.—P. JENSEN (C. Arnesen): *Extension or Dining-room Tables, and the like.*

This invention relates to an extensible rail for dining-room tables, and the like. The connexion between the staves or bars of the rails is formed by clamping-irons, which are fixed on the bars near their ends and slide in grooves in the outer edges of the adjoining bars. These clamps are so arranged that one such at the one end of the rail engages with grooves in the adjoining bar, whilst the clamp at the opposite end of the rail is fixed on the last-named bar and engages with the grooves in the outer edges of the first-named bar. In this manner any two neighbouring bars of the rail engage with each other by means of two clamps, of which one is fixed on one of the bars at one end of the rail, while the other is fixed on the other bar and at the opposite ends of the rail. As these clamps are fixed at opposite ends of the adjoining sides of two bars, they serve at the same time as stops, which prevent the bars from being pulled quite apart. Stoppers are also applied for the return, a piece of wood being for this purpose inserted in that end of the groove where the rail slides out. The edges compassed by the clamps are a little narrower than the bars themselves, in order that the ends shall not reach beyond them.

7,557 of 1904.—J. P. PIKE: *Gas Stoves.*

A gas stove, distinguished by having the burner or burners arranged in the passage in such a way that the heat, travelling along the passage, passes round the outside of the oven, boiler, or other chamber to be heated before escaping into the flue.

7,764 of 1904.—G. LEVY: *Certain kinds of Latches for Doors, and other similar hinged parts.*

A door or like latch in which a sliding spindle, to which is attached knobs, carries an inclined piece, to act upon another inclined piece of a shifting locking bolt, which is thereby operated to release or free the catch-piece of the latch.

12,372 of 1903.—A. S. NELSON AND A. STEWART: *Valve Apparatus for Controlling the Discharge of Water, Spray, Sand, or the like, on roadways and other tracks.*

The apparatus comprises an outer casing of cast-iron or other suitable metal, preferably constructed in two portions, with flanges for the purpose of bolting the portions together. An inner plug is provided, formed in such a manner, and provided with such holes or ports suitably shaped as will, upon the plug being caused to revolve, bring the holes or ports into such position as will allow the liquid to flow from the main pipé, either from above or below the plug, to any of the desired directions, either singly or conjointly at will, through branch pipes to perforated pipes or sprinklers situated in any convenient position upon the vehicle. A spindle provided with a hand-wheel or lever, or handle, or the like, is furnished with indicating letters, figures, or other characters to indicate the position of the holes or posts in the valve, and suitable stops are also provided for the purpose of locking the controlling device in the "off" or in any other desired position.

5,713 of 1904.—G. H. THURSTON: *Rock and Ore Breakers.*

A rock and ore breaker, consisting of a crushing head formed of a vertically grooved cone-shaped core portion, having cam surfaces extending to the grooves, and a cone-shaped mantel provided with lug mechanism engaging cam surfaces of the core portion, whereby both parts are held in engagement and rotated simultaneously in operation, or may be separated whenever desired.

6,830 of 1904.—D. D. MCBEAN: *A Method and Means for the Construction of Subaqueous Tunnels and the like.*

A tunnel construction, consisting of a fixed subaqueous working chamber, covering and enclosing the site, or a cross sectional portion thereof, a section of the upper portion of the tunnel tube constituting the roof thereof, and the walls thereof being seated upon bed-rock, or extending to a sufficient depth in other material to prevent lateral inflow during the work of excavation.

7,437 of 1904.—W. L. H. HAMILTON: *Manufacture of Metal Pieces or Tessaræ, used in the Construction of Mosaics.*

This invention has for its object to protect the pieces or tessaræ composed of two or more layers of material by covering with an upper or surface layer of glass or enamel the edges and sides of each piece or tessaræ in such a manner as to give to the under layers complete protection from damp, and, at the same time, to render impossible the falling away of the glazed or enamelled surface.

7,605 of 1904.—F. VON HARDTMUTH: *Lead Pencils, Crayons, and the like.*

A pencil having a movable core or "lead," and provided with a hook or the like for pulling out and fixing the said core in position, the said hook or the like being made of wood, fibrous material, ebonite, horn, or the like, and provided with an enlarged end part having an inclined surface, by means of which the core can be wedged in the desired position.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

May 14.—By DILLEY, SON, & READ (at Huntingdon).

Alconbury Weston, Hunts.—"The Hill Farm," 96 a. 1 r. 8 p., f. and c., y.r. 125*l.*	£2,300
Brington, Hunts. — A freehold farm, 221 a. 1 r. 10 p., y.r. 160*l.*	2,350

May 19.—By WALTER LUDLOW & BRISCOE (at Birmingham).

Knowle, Warwick.—"The Springfield Hall Estate," 616 a. 3 r. 28 p., f. (in lots)	23,585

By W. & S. FREEMAN (on the premises).

Highbury.—19 and 21, Hamilton-rd. (Highbury Park Livery Stables), u.t. 16 yrs., y.r. 72*l.* 10s. (with goodwill)	310

May 20.—By THOMAS HAWKES & Co. (at Minehead).

Cutcombe, Somerset. — "North Wheddon Farm," 90 a. 2 r. 5 p., f.	2,875

By DOWSETT, KNIGHT, & Co. (at Walthamstow).

Walthamstow.—4 to 10 (even), Colebrook-rd., u.t. 72 yrs., g.r. 13*l.*, w.r. 119*l.* 12s.	490

May 24.—By FRASER & HEIGH.

Kentish Town.—59 to 71 (odd), 77, 79, and 81, Leverton-st., u.t. 61 yrs., g.r. 26*l.*, y.r. 408*l.*	4,855
26, 28, 30, 32, 33, 35, and 37, Falkland-rd., u.t. 58 yrs., g.r. 28*l.*, y.r. 313*l.*	3,480

By SIMMONDS & Co.

Norwood.—6, Shirley-villas, u.t. 92 yrs., g.r. 6*l.*, y.r. 30*l.*	290

By WAGSTAFF & SONS.

Holloway.—62 and 64, George's-rd., area 4,500 ft., f., p.	480

May 25.—By BISLEY & SONS.

Bermondsey.—76 to 81, Enid-st., u.t. 13 yrs., g.r. 18*l.*, w.r. 202*l.* 16s.	620
9 and 10, Cadbury-rd., u.t. 62 yrs., g.r. 9*l.*, w.r. 75*l.* 8s.	580

By W. BRACKETT & SONS.

Catford.—10, Rushey-green (s.), u.t. 77 yrs., g.r. 20*l.* 6s., y.r. 55*l.*	625

By DYER, SON, & HILTON.

Lewisham.—17 and 18, Lewisham-pk., u.t. 70 yrs., g.r. 24*l.*, y.r. 120*l.*	950
26 and 29, Lewisham-pk., u.t. 70 yrs., g.r. 4*l.*, y.r. 120*l.*	1,330
53, Lewisham-pk., u.t. 70 yrs., g.r. 15*l.*, y.r. 70*l.*	550
Lewisham-pk., l.g.r. 9*l.*, u.t. 70 yrs., g.r. nil yrs.	180
Dulwich.—76, Adys-rd., u.t. 71 yrs., g.r. 5*l.*, y.r. 34*l.*	340

By GREEN & LINES.

Chiswick.—34 to 40 (even), Annandale-rd., u.t. 75 yrs., g.r. 25*l.* 4s., y.r. 201*l.* 10s.	1,355

By V. S. LEIGH.

Old Ford.—27 and 29, Ford-st., u.t. 59 yrs., g.r. 12*l.*, w.r. 91*l.*	385
Peckham.—104, Kimberley-rd., u.t. 69½ yrs., g.r. 4*l.* 10s., e.r. 36*l.*	265

By MATTHEWS, MATTHEWS, & GOODMAN.

Holloway.—Hillmarten-rd., l.g.r. 16*l.*, u.t. 38 yrs., g.r. 2*l.*	230

By GUY & SON (at Hailsham).

Hellingly, etc., Sussex. — "Bowlers" and "Haglye" Farms, 136 a. 1 r. 38 p., f. (in lots)	2,775

By N. EASTON & SON (at Hull).

Brough, Yorks.—"Glenrock" and 12 a. 1 r. 0 p., f.	6,300

May 26.—By CHANCELLOR & SONS.

Kew Green, Surrey.—"White House," f., p.	850

By C. C. & T. MOORE.

Hackney-road.—Nos. 293 and 295 (s.), f., y.r. 85*l.*	1,060
Commercial-road East.—27, White Horse-st. (s.), f., w.r. 20*l.* 16s.	205
Stepney.—11 and 15, Brenton-st., c., w.r. 54*l.* 12s.	475
9, Repton-st., c., w.r. 27*l.* 6s.	225
35, Samuel-st., c., w.r. 26*l.*	255
Limehouse.—90, 92, 94, and 94A, West India Dock-rd. (shops and workshops), area 5,000 ft., f., y.r. 146*l.* 10s.	2,220
64, West India Dock-rd. (s.), c., e.r. 55*l.*	615
5, Limehouse-causeway (s.), c., e.r. 55*l.*	515
Poplar.—439 and 441, East India Dock-rd., u.t. 69 yrs., g.r. 10*l.* 10s., y.r. 60*l.*	560

By HARRIS STACEY.

Reigate, Surrey.—Wray Park, "Brightlands" and 1¼ acre, f., y.r. 130*l.*	2,350

By STIMSON & SONS.

Fulham.—Stephendale-rd., f.g. rents 164*l.* 7s., reversion in 92 yrs.	4,125
Chiswick.—Fielding-rd., f.g.r. 5*l.*, reversion in 92 yrs.	125
Forest Gate.—Romford-rd., f.g. rents 12*l.*, reversion in 81 yrs.	315
Sutton, Surrey.—Ringstead-rd., f.g. rents 40*l.*, reversion in 84 yrs.	1,000
Forest Hill.—Upper Colfe-rd., four freehold residences (named), y.r. 109*l.* 16s.	1,000
Battersea.—104 and 106, Livingstone-rd., u.t. 60½ yrs., g.r. 11*l.*, w.r. 72*l.* 16s.	410
15, 17, and 19, Howie-st., f., w.r. 91*l.*	880
Balham.—119, Broomwood-rd., u.t. 75½ yrs., g.r. 7*l.* 7s., y.r. 41*l.*	350
New Cross.—6 and 7, Eckington-gdns., u.t. 71½ yrs., g.r. 9*l.*, w.r. 67*l.* 12s.	550
59, 61, 65, and 67, Barlborough-st., u.t. 71½ yrs., g.r. 16*l.* 10s., w.r. 141*l.* 14s.	1,165

By D. L. GOOCH.

Acton.—20 and 22, Gloucester-rd., u.t. 61 yrs., g.r. 12*l.*, w.r. 62*l.* 8*s.*	£400
Anerley.—102 and 106, Croydon-rd., u.t. 91½ yrs., g.r. 24*l.*, y.r. 120*l.*	1,150

By STOKES & PINDER.

Caledonian-road.—155, Copenhagen-st. (s.), u.t. 36 yrs., g.r. 24*l.* 10*s.*, y.r. 104*l.*	475

By VENTOM, BULL, & COOPER.

Barking Creek, Essex.—Fisher-st., "Lower" and "Bangor" Wharves, f., y.r. 750*l.*	5,000

By WALTON & LEE.

Lewes, Sussex.—"The Malling House Estate," 51 a. 2 r. 14 p., f.	9,500

By WORSFOLD & HAYWARD.

Camberwell.—20, 22, 24, and 26, Mawbey-rd., f., y.r. 153*l.* 8*s.*	1,750

By BARBER & SON (at Wellington).

Malinslee, etc., Salop.—The Old Park and Stirchley Estate, area 180 a. 1 r. 20 p., f., including mines and minerals (in numerous lots)	3,015

May 27.—By W. A. BLAKEMORE.

Kilburn.—167, 169, and 171, Canterbury-rd., u.t. 59 yrs., g.r. 18*l.*, w.r. 93*l.* 12*s.*	735

By DOLMAN & PEARCE.

Holloway.—39 and 41, Pemberton-ter., u.t. 80 yrs., g.r. 10*l.*, y.r. 90*l.*	980
Hampstead.—5, Lawn-rd., u.t. 46½ yrs., g.r. 17*l.*, e.r. 85*l.*	650

By PERCIVAL HODSON.

Stamford Hill.—6, 14, and 16, St. Andrew's Pavement (s.), u.t. 79 yrs., g.r. 30*l.*, y.r. 250*l.*	3,600
Tottenham.—427, West Green-rd. (s.), u.t. 63 yrs., g.r. 7*l.* 10*s.*, y.r. 36*l.*	320

By REYNOLDS & EASON.

Islington.—Arlington-sq., l.g. rents 63*l.*, u.t. 23 yrs., g.r. 25*l.* 4*s.*	435
Linton-st., l.g. rents 55*l.*, u.t. 23 yrs., g.r. 21*l.*	380
Walthamstow.—19 and 21, East-av., f., y.r. 72*l.*	950
Kingston, Surrey.—Eden-st., freehold granary and malting premises, area 12,000 ft., p. (including goodwill)	1,570

By A. J. SHEFFIELD.

Hackney Wick.—26, 28, and 30, Victoria-rd., u.t. 61 yrs., g.r. 15*l.*, w.r. 101*l.* 8*s.*	670
Poplar.—76, 78, 88 to 94 (even), Teviot-st., u.t. 61 yrs., g.r. 25*l.* 10*s.*, w.r. 218*l.* 4*s.*	1,840
Blackwall.—22, Prestage-st., f., w.r. 31*l.* 4*s.*	325
Stepney.—1 to 9 (odd), Duckett-st., u.t. 13 yrs., g.r. 12*l.* 12*s.*, w.r. 81*l.* 18*s.*	250

By S. WALKER & SON.

Whitechapel.—39, 45, 47, and 51, Whitechapel-rd. (s.), f., y.r. 435*l.*	8,480
49, Whitechapel-rd. (The Victorian Restaurant), f., y.r. 120*l.*	2,650

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beer-house; p.h. for public-house; o. for offices; s. for shops; ct. for court.

MEETINGS.

FRIDAY, JUNE 3.

Royal Institution.—Professor Svante Arrhenius, of Copenhagen, on "The Development of the Theory of Electrolytic Dissociation." 9 p.m.

SATURDAY, JUNE 4.

Royal Institution.—Sir W. Martin Conway, M.A., on "Spitsbergen in the XVIIth Century," II. 3 p.m.

Northern Architectural Association.—Visit to West Hartlepool.

British Institute of Certified Carpenters.—The Annual Dinner, at the Holborn Restaurant. 7 p.m.

Institute of Sanitary Engineers.—Visit to the new buildings of the University College Hospital, Gower-street, London, W.C. 3 p.m.

MONDAY, JUNE 6.

Royal Institute of British Architects.—(1) Special General Meeting. The Chairman to move that the following words be added at the end of the first clause of by-law 3:—"After the 31st December, 1906, every person desiring to be admitted a Fellow shall be required to have passed the Examination or Examinations qualifying him as an Associate. But in special cases the Council by the votes of three-fourths of such Members of the Council as are present and voting at a meeting of the Council shall have power to dispense with such Examination or Examinations." (2) The Fifteenth General Meeting (Business and Ordinary). (*a*) To receive the Report of the Scrutineers appointed to direct the election of the Council, Standing Committees, etc., for the year of office 1904-5. (*b*) To elect candidates for membership under By-laws 7, 8, and 9. (*c*) To resume the discussion on "The Plenum System of Ventilation," adjourned from the Meeting of December 4 last, on the occasion of the Paper by Messrs. Wm. Henman and Henry Lea on the Royal Victoria Hospital, Belfast. 8 p.m.

Society of Engineers.—Mr. Percy G. Scott on "Railway Surveys and Design in New Countries." 7.30 p.m.

THURSDAY, JUNE 9.

Institution of Electrical Engineers.—Annual General Meeting. 5 p.m.

SATURDAY, JUNE 11.

Edinburgh Architectural Association.—Visit to Castle Campbell.

St. Paul's Ecclesiological Society.—Visit to the Church of St. Mary-le-Bow, at 2.30 p.m., and afterwards to St. Mary Aldermary at 3.15, and St. Mildred, Bread-street, at 3.45, under the guidance of Mr. Philip Norman, F.S.A.

TO CORRESPONDENTS.

G. G.—R. B.—F. T. (Below our limit).—H. S.—J. F. S. (Amounts should have been stated).—A. H. M. (Next week).

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, manuscripts, or other documents, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and Quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 16 0	per 1000 alongside, in river.
Bough Stocks and Grizzles	1 13 0	" " "
Facing Stocks	2 12 0	" " "
Shippers	2 10 0	" " "
Flettons	1 10 0	" at railway depôt.
Red Wire Cuts	1 13 0	" " "
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire	4 4 0	" " "
Do. Bullnose	4 10 0	" " "
Best Stourbridge Fire Bricks	4 8 0	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	13 0 0	" " "
Headers	12 0 0	" " "
Quoins, Bullnose, and Flats	17 0 0	" " "
Double Stretchers	19 0 0	" " "
Double Headers	16 0 0	" " "
One Side and two Ends	19 0 0	" " "
Two Sides and one End	20 0 0	" " "
Splays, Chamferred, Squints	20 0 0	" " "
Best Dipped Salt Glazed Stretchers, and Header	12 0 0	" " "
Quoins, Bullnose, and Flats	14 0 0	" " "
Double Stretchers	15 0 0	" " "
Double Headers	14 0 0	" " "
One Side and two Ends	15 0 0	" " "
Two Sides and one End	15 0 0	" " "
Splays, Chamferred, Squints	14 0 0	" " "
Second Quality White and Dipped Salt Glazed	2 0 0	" less than best.

	s. d.	
Thames and Pit Sand	7 3	per yard, delivered.
Thames Ballast	6 0	" "
Best Portland Cement	30 0	per ton, "
Best Ground Blue Lias Lime	21 0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 6d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8¾	" "
PORTLAND STONE (20 ft. average)—		
Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2 1	" "
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2 2½	" "

	s. d.	
Ancaster in blocks	1 11	per ft. cube, deld. rly. depôt.
Beer "	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks	2 4	" "
Red Corsehill "	2 5	" "
CloseburnRedFreestone	2 0	" "
Red Mansfield "	2 4	" "

YORK STONE—*Robin Hood Quality*

	s. d.	
Scappled random blocks	2 10	per ft. cube, "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per foot super. "
6 in. rubbed two sides ditto, ditto	2 6	per ft. super. deld. rly. dpt.
3 in. sawn two sides slabs (random sizes)	0 11½	" "
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	" "
1½ in. to 2 in. ditto, ditto	0 6	" "
HARD YORK—		" "
Scappled random blocks	3 0	per ft. cube, "
6 in. sawn two sides, landings to sizes (under 40 ft. super.)	2 8	per ft. super. "
6 in. rubbed two sides Ditto	3 0	" "
3 in. sawn two sides (slabs random sizes)	1 2	" "
2 in. self-faced random flags	0 5	" "
Hopton Wood (Hard Bed) in blocks	2 3	per ft. cube.
" " " 6 in. sawn both sides landings	2 7	deld. rly. depôt per ft. super. deld. rly. depôt
" " " 3 in. do.	1 2½	" "

SLATES.

in. in.	£ s. d.	
20 × 10 best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20 × 12 "	13 17 6	" "
20 × 10 first quality "	13 0 0	" "
20 × 12 " " "	13 15 0	" "
16 × 8 " " "	7 5 0	" "
20 × 10 best blue Portmadoc	12 12 6	" "
16 × 8 " "	6 12 6	" "
20 × 10 best Eureka unfading green	15 17 6	" "
20 × 12 " "	18 7 6	" "
18 × 10 " "	13 5 0	" "
16 × 8 " "	10 5 0	" "
20 × 10 permanent green	11 12 6	" "
18 × 10 " "	9 12 6	" "
16 × 8 " "	6 12 6	" "

TILES.

	s. d.	
Best plain red roofing tiles	42	0 per 1000 at rly. depôt.
Hip and Valley tiles	3	7 per doz. " "
Best Broseley tiles	50	0 per 1000 " "
Do. Ornamental tiles	52	6 " " "
Hip and Valley tiles	4	0 per doz. " "
Best Ruabon red, brown, or brindled do. (Edwards)	57	6 per 1000 " "
Do. Ornamental do	60	0 " " "
Hip tiles	4	0 per doz. " "
Valley tiles	3	0 " " "
Best Red or Mottled Staffordshire do. (Peakes)	51	9 per 1000 " "
Do. Ornamental do	54	6 " " "
Hip tiles	4	1 per doz. " "
Valley tiles	3	8 " " "
Best "Rosemary" brand plain tiles	48	0 per 1000 " "
Best Ornamental tiles	50	0 " " "
Hip tiles	4	0 per doz. " "
Valley tiles	3	8 " " "
Best "Hartshill" brand plain tiles, sand faced	50	0 per 1000 " "
Do. pressed	47	6 " " "
Do. Ornamental do	50	0 " " "
Hip tiles	4	0 per doz. " "
Valley tiles	3	6 " " "

WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	15 10 0	16 10 0
Deals: best 3 by 4	14 10 0	15 10 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 10 0	12 10 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less thn best
Battens: seconds	0 10 0	" " "
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	9 10 0
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	9 10 0
Foreign Sawn Boards— 1 in. and 1½ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"
	At per load of 50 ft.	
Fir timber: best middling Danzig or Memel (average specification)	4 10 0	5 0 0
Seconds	4 5 0	4 10 0
Small timber (8 in. to 10 in.)	3 12 6	3 15 0
Small timber (6 in. to 8 in.)	3 0 0	3 10 0
Swedish balks	2 15 0	3 0 0
Pitch-pine timber (30 ft. average)	3 5 0	3 15 0

JOINERS' WOOD.

White Sea:	At per standard. £ s. d.	£ s. d.
first yellow deals, 3 in. by 11 in	23 0 0	24 0 0
3 in. by 9 in.	21 0 0	22 10 0
Battens, 2½ in. and 3 in. by 7 in.	17 0 0	18 10 0
Second yellow deals, 3 in. by 11 in.	18 10 0	20 0 0
3 in. by 9 in.	17 10 0	19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	15 10 0	16 10 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	12 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0
Do. 3 in. by 9 in.	18 0 0	19 10 0
Battens	13 10 0	15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	17 0 0
Do. 3 in. by 9 in.	14 10 0	16 0 0
Battens	11 0 0	12 10 0
Third yellow deals, 3 in. by 11 in.	13 10 0	14 0 0
Do. 3 in. by 9 in.	13 0 0	14 0 0
Battens	10 0 0	11 0 0
White Sea and Petersburg:—		
First white deals, 3 in. by 11 in.	14 10 0	15 10 0
" " 3 in. by 9 in.	13 10 0	14 10 0
Battens	11 0 0	12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	14 10 0
" " 3 in. by 9 in.	12 10 0	13 10 0
" " battens	9 10 0	10 10 0

WOOD.—(*continued*).

	At per standard. £ s. d.	£ s. d.
Pitch-pine: deals	16 10 0	20 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—First, regular sizes	35 0 0	upwards.
Oddments	24 0 0	26 0 0
Seconds, regular sizes	26 10 0	28 10 0
Yellow Pine oddments	22 0 0	24 0 0
Kauri Pine—Planks, per ft. cube	0 3 6	0 5 0
Danzig and Stettin Oak Logs—		
Large, per ft. cube	0 2 6	0 3 6
Small ,, ,,	0 2 3	0 2 6
Wainscot Oak Logs, per ft. cube	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 7	0 0 8
¼ in. do. do.	0 0 6½	—
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	0 0 11
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	17 0 0	21 0 0
American Whitewood Planks—per ft. cube	0 4 0	—
Prepared Flooring—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	0 17 6
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	0 13 6
¾ in. by 7 in. do. do. do.	0 14 0	0 18 0
1 in. by 7 in. white do. do.	0 10 0	0 11 6
1 in. by 7 in. do. do. do.	0 11 6	0 13 6

6 in. at 6d. to 9d, per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0 ...	7 5 0
Compound Girders, ordinary sections	8 2 6 ...	9 5 0
Angles, Tees and Channels, ordinary sections	7 17 6 ...	8 17 6
Flitch Plates	8 5 0 ...	8 15 0
Cast Iron Columns and Stanchions including ordinary patterns	7 2 6 ...	8 5 6

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	7 5 0 ...	7 15 0
Staffordshire Crown Bars, good merchant quality	7 15 0 ...	8 5 0
Staffordshire "Marked Bars"	10 0 0 ...	—
Mild Steel Bars	8 15 0 ...	9 5 0
Hoop Iron, basis price	9 5 0 ...	9 10 0
,, ,, Galvanized	17 10 0 ...	—
("And upwards, according to size and gauge.)		
Sheet Iron (Black)—		
Ordinary sizes to 20 g.	9 15 0 ...	—
,, ,, 24 g.	10 15 0 ...	—
,, ,, 26 g.	12 5 0 ...	—
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.	12 15 0 ...	—
Ordinary sizes to 22 g. and 24 g.	13 5 0 ...	—
,, 26 g.	14 5 0 ...	—
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	16 0 0 ...	—
,, ,, 22 g. and 24 g.	16 10 0 ...	—
,, ,, 26 g.	18 0 0 ...	—
Galvanised Corrugated Sheets—		
Ordinary sizes 6 ft. to 8 ft. 20 g.	12 10 0 ...	—
,, ,, 22 g. and 24 g.	13 0 0 ...	—
,, ,, 26 g.	13 15 0 ...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11 15 0 ...	—
Best Soft Steel Sheets, 22 g. & 24 g.	12 15 0 ...	—
,, ,, ,, 26 g.	14 0 0 ...	—
Cut nails, 3 in. to 6 in.	9 0 0 ...	9 10 0

(Under 3 in., usual trade extras.)

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3lb. and up	14 7 6 ...	—
Pipe in coils	14 17 6 ...	—
Soil pipe	17 7 6 ...	—
Compo pipe	17 7 6 ...	—
ZINC—Sheet—		
Vieille Montagne ...ton	27 5 0 ...	—
Silesian	27 0 0 ...	—
COPPER—		
Strong Sheet...per lb.	0 0 10½ ...	—
Thin ,, ... ,,	0 0 11½ ...	—
Copper nails ... ,,	0 0 11 ...	—
BRASS—		
Strong Sheet ... ,,	0 0 10 ...	—
Thin ,, ... ,,	0 0 11 ...	—
TIN—English Ingots ... ,,	0 1 4 ...	—
SOLDER—Plumbers' ... ,,	0 0 6½ ...	—
Tinmen's ... ,,	0 0 8 ...	—
Blowpipe ... ,,	0 0 9 ...	—

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2¼d. per ft. delivered.
,, fourths	1¾d. ,, ,,
21 oz. thirds	3¼d. ,, ,,
,, fourths	2¾d. ,, ,,
26 oz. thirds	4d. ,, ,,
,, fourths	3¼d. ,, ,,
32 oz. thirds	5d. ,, ,,
,, fourths	4¼d. ,, ,,
Fluted Sheet, 15 oz.	3d. ,, ,,
,, 21 oz.	4d. ,, ,,
⅛ Hartley's Rolled Plate	1¾d. ,, ,,
3/16 ,, ,, ,,	1¾d. ,, ,,
¼ ,, ,, ,,	2¾d. ,, ,,

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes or barrels	per gallon	0 1 5
,, ,, ,, in drums	,,	0 1 8
Boiled ,, ,, in pipes or barrels	,,	0 1 8
,, ,, ,, in drums	,,	0 1 11
Turpentine, in barrels	,,	0 3 7
,, in drums	,,	0 3 9
Genuine Ground English White Lead	per ton	19 0 0
Red Lead, Dry	,,	19 0 0
Best Linseed Oil Putty	per cwt.	0 6 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

PUBLISHER'S NOTICES.

Nat. Tel., 6112, Gerrard. Telegrams, "The Builder, London."

THE INDEX (with TITLE-PAGE) for VOLUME LXXXV. (July to December, 1903) was given as a supplement with issue of January 9 last.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

READING CASES (Cloth), with Strings, price 2d. each.

THE EIGHTY-FIFTH VOLUME of "The Builder" (bound), price Twelve Shillings and Sixpence.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 2s. 6d. each.

CHARGES FOR ADVERTISEMENTS.

COMPETITIONS, CONTRACTS, ALL NOTICES ISSUED BY CORPORATE BODIES, COUNTY AND OTHER COUNCILS, PROSPECTUSES OF PUBLIC COMPANIES, SALES BY TENDER, LEGAL ANNOUNCEMENTS, &c., &c.

Six lines, or under ... 2s. 6d.
Each additional line ... 1s. 0d.

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PREPAYMENT IS ABSOLUTELY NECESSARY.

. Stamps must not be sent, but all sums should be remitted by Postal Orders, payable to J. MORGAN, and addressed to the Publisher of "THE BUILDER," Catherine Street, W.C.

Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the Outside Wrapper should be in by TWELVE noon on WEDNESDAY.

ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before TEN o'clock on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

PERSONS advertising in "THE BUILDER" may have *Replies addressed to the Office*, Catherine Street, Covent Garden, W.C., *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage. Unused stamps are returned to advertisers the week after publication.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES { NINEPENCE EACH. By post (carefully packed) 1s.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

BALRATH (co. Meath).—For the erection of a new wing and alterations to residence and stables at the Grove, Balrath, for Mr. F. Douglas Osborne. Mr. F. Shaw, architect, 36, South Frederick-street, Dublin :—

Smith Bros.	£2,100	McDonnell, Drogheda*	£1,790
H. Henly	1,820		

BRISTOL.—For the erection of first section of All Saints Church, Fishponds. Messrs. Lingen Barker & Son, architects, 9, Clare-street, Bristol :—

W. Hopkins	£4,300	G. Humphreys & Son	£3,443
A. S. Ingleton	4,186	E. Love	3,310
H. A. Forse & Son	4,158	R. Wilkins & Son	3,189
A. E. Denby & Co.	4,109	E. Clark, Bristol*	3,113
Stephens & Bastow	3,873	S. H. Eastwood	2,993
E. Walters & Son	3,537		
J. Browning	3,488		

CHESTER-LE-STREET.—For water-supply works at Usworth, for the Rural District Council. Mr. J. H. Mole, surveyor, Chester-le-street. Quantities by Surveyor :—

J. Tweddle & Co.	£995 14 6	J. Coton & Son	£708 11 3
J. Archibald	893 15 0	Bushby & Sons	679 18 3
W. Straugham	871 14 10	W. Elliott	647 17 4½
W. & T. Lant	825 0 3	J. G. Rutter & Sons, Washington Station*	618 19 11
J. Carrick	795 10 0		
Bland & Co.	789 10 0		
J. Laidler & Son	714 9 7		

[Surveyor's estimate, £667 4s. 6d.]

CLONES.—For additions and improvements to Ardrumsee Church, for the Very Rev. L. J. Canon O'Neill. Mr. W. A. Scott, architect, 72, Hollybank-road, Drumcondra, Dublin :—

P. Duffy, Carrickmacross* ... £728 2 0

COMPTON (Berks.).—For building villa residence, for Mr. W. A. Hughes. Messrs. Cowell & Shaw, architects, 49, Finsbury-pavement, E.C. :—

H. J. Trinder, Caversham, Oxon* ... £325

CROYDON.—For about 900 yds. of 12-in. and 900 yds. of 9-in. sewer, Plough-lane, Beddington, for the Rural District Council. Mr. R. M. Chart, Surveyor, Town Hall, Croydon :—

Johnson & Langley, Silver Arcade, Leicester* ... £2,200

CROYDON.—For erecting two padded rooms at infirmary, Mayday-road, for the Guardians. Mr. F. West, surveyor, 23, Coombe-road, Croydon :—

Sedgwick Bros., Trant-road, Thornton Heath* £109

EAST GRINSTEAD.—For sewerage works, Forest-row, for the Rural District Council. Messrs. Bailey-Denton, Lawford, & Symons, engineers, 9, Bridge-street, Westminster :—

Pethwick Bros.	£13,941 0 0	Dixon & Co.	£11,846 2 2
W. Manders	13,020 0 9	Wilkinson Bros.	11,334 0 0
F. Osenton	12,691 0 0	Peerless, Dennis, & Co.	11,267 0 0
F. W. Trimm	12,543 0 0	J. Jackson, Forest Gate*	11,140 8 1
B. Cookes & Co.	12,513 0 0	J. G. Pickard	10,054 13 2
Killingback & Co.	12,485 0 0		
J. & T. Binns	12,414 16 8		
Wallis & Co.	11,948 4 5		

EXETER.—For new wall along the riverside, from Exe Bridge to Shooting Marsh Stile, for the City Council. Mr. T. Moulding, City Engineer and Surveyor :—

W. Harris, Clysthydon, near Exeter .. £3,695 19 0

FERRYHILL (co. Durham).—For rebuilding the Black Bull Inn. Mr. Stephen Wilkinson, architect, 30, Mosley-street, Newcastle-on-Tyne :—

C. Groves	£1,583 0 0	Manners	£1,435 0 0
Young	1,575 17 6	Mann	1,405 10 0
W. Foster	1,552 0 0	Howe, West Hartlepool*	1,400 0 0
Draper & Son	1,450 0 0		

GUILDFORD.—For converting the old boiler house at Millmead into a public mortuary, for the Town Council. Mr. C. G. Mason, Borough Surveyor, Tuns Gate, Guildford :—

A. J. Gibson	£320	A. Franks	£258
R. Wood	274	R. Smith, Guildford*	238
Tribe & Robinson	262		

HITCHIN.—For erecting block of three shop premises in Brand-street, for Mrs. Robert Hood Baker. Mr. Walter Graves, architect, Winchester House, London, E.C. Quantities by Messrs. Henry Gritten & Son, Westminster, S.W. :—

W. Seymour & Son	£1,120	W. Jeeves*	£1,062 14 6
F. Newton	1,097		

HITCHIN.—For alterations and additions to Wine Warehouse, "Bancroft," for Mrs. Robert Hood Baker. Mr. Walter Graves, architect, Winchester House, London, E.C. :—

F. Newton* ... £228 0 0

ILFORD.—For widening Loxford Bridge, Ilford-lane, for the Urban District Council. Mr. H. Shaw, Surveyor to the Council, Town Hall, Ilford :—

D. T. Jackson, 104, Ripple-road Barking, Essex* ... £748 16 10

KILMARNOCK.—For permanent way construction, excavation, concrete foundations, etc. (Contract No. 10, Electric Light and Power Supply), for the Corporation. Messrs. Kennedy & Jenkin, engineers, 17, Victoria-street, Westminster, S.W. :—

D. Kerr & Co., Ltd., London* .. £22,784 6 6

LINCOLN.—For erecting public elementary school, Monk's-road, for the Lincoln Education Authority. Messrs. W. Watkins & Son, architects, Silver-street, Lincoln :—

F. Messom	£7,050	H. S. & W. Close	£6,555
S. & R. Horton	6,961	W. Wright & Son, Lincoln*	6,200
T. Cuthbert	6,700		
Mawer Bros.	6,632		

LONDON.—For the erection of casual wards, Waterloo-road, Victoria-park, N.E., for the Bethnal Green Board of Guardians. Mr. W. A. Finch, architect, 76, Finsbury-pavement, E.C. Quantities by Mr. C. H. Goode, 22, Buckingham-street, Adelphi, W.C. :—

Wellerman Bros.	£7,163 0 0	H. Lovatt	£5,650 0 0
A. Porter	6,091 0 0	F. & T. Thorne	5,647 0 0
R. A. Lowe	5,989 0 0	S. E. Moss & Co.	5,600 0 0
F. G. Minter	5,987 0 0	J. Appleby & Sons	5,590 0 0
A. Reason	5,947 0 0	W. Lawrence & Co.	5,487 0 0
Whitehead & Co., Ltd.	5,892 0 0	H. Kent	5,420 0 0
F. & A. Wilmott	5,798 0 0	J. Ferguson & Co.	5,397 18 7
C. Dearing & Son	5,782 0 0	Foster Bros.	5,231 0 0
Leslie & Co., Ltd.	5,697 0 0		

[Architect's estimate £5,491 5s.]

TENDERS—*Continued on page* 621.

CONTRACTS AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., supplied by	Tenders to be Delivered
Extension of Mill, New Lane Mills, Laisterdyke	.....	T. Barker & Son, Engineers and Architects, 5, Bank-st., Bradford	June 6
Painting and Colouring Council Schools	Halifax Education Committee	J. Lord, C.E., Town Hall, Halifax	do.
Two Dwelling-h'ses, Houseley Hall-lane, Chapeltown	Messrs. J. & W. Kay	E. Hutchinson & Son, Surveyors, 18, Howard-street, Rotherham	do.
Milling Machinery	Warrington Property Purch. Com. ..	T. Longdin, Borough Engineer, Town Hall, Warrington	do.
Steel Sole-plates, Clips, etc.	Dublin & Blessington S. Tram. Co. ..	P. H. McCarthy, 32, Bachelor's-walk, Dublin	do.
Making-up Lyttleton-road, Stechford	Yardley R.D.C.	A. W. Smith, Eng. & Surv., Council Ho., Sparkhill, nr. Birm'ham	do.
Draining, etc., Parkfield-avenue, Rusholme	Manchester Paving, etc., Committee	Paving, etc., Department, Town Hall, Manchester	do.
Sewering, Paving, etc., Marwood-street	do.	do.	do.
Draining, etc., Brunt-street	do.	do.	do.
Draining, etc., Parkfield-street	do.	do.	do.
2,800 lin. yds. of Creosoted Morticed Fencing	Lancashire County Council	W. H. Schofield, County Surveyor, County Offices, Preston	do.
Painting, etc., at Workhouse, Thrapston	The Guardians	Master of Workhouse	do.
Hospital, Cloverhill, Ayr	Ayr District Committee	D. W. Shaw, 5, Wellington-square, Ayr	do.
*Laying and Maintaining Compressed Asphalte Paving	Portsmouth Town Council	The Clerk, Town Hall, Portsmouth	do.
Normanton Isolation Hospital, Featherstone	.....	W. H. Fearnley, Architect, Station-lane, Featherstone, Yorks. ..	June 7
House, Surgery, etc., Wesley-road, Armley	Dr. J. Lamonby	C. F. Wilkinson, Architect, 35, Park-square, Leeds	do.
Repair of Roads	Croydon Borough Council	Borough-road Surveyor's Office, Town Hall, Croydon	do.
Repairing Roadway Girders, Victoria Bridge, Chelsea	The L.C.C.	Engineer's Department, County Hall, Spring-gardens, S.W.	do.
Repairing Carriageways, Victoria Bridge, Chelsea ..	do.	do.	do.
Sea Wall	Truro River Committee	M. Lea, City Surveyor, Truro	do.
Excavation and Removal of Bank	do.	do.	do.
Excavation from Bed of River	do.	do.	do.
Street-making, Part of John-street, etc., ...	Crewe Town Council	G. Eaton-Shore, Borough Surveyor, Crewe	do.
Farmhouse, Burthy-row, St. Enoder	Rt. Hon. Viscount Falmouth	Farmhouse, Burthy-row	do.
Stores	Bradford Cleansing, etc., Committee	Superintendent Call, Hammerton-street Depot	do.
Alterations, etc., Rehoboth Congre. Ch., Brynmawr	.....	Habershon & Fawckner, Architects, 41, High-street, Newport	do.
Street Works, Clive-ter. and Church-st., Ynysybwl..	Mountain Ash U.D.C.	W. G. Thomas, Surveyor to Council, Public Offices, Mountain Ash	do.
Broken Whinstone	Gosforth U.D.C.	C. J. Baff, Surveyor, Council-chambers, Gosforth	do.
Carting Work	do.	do.	do.
Pair of Houses at Cwmffrwdoer	Mr. A. Jeremiah	Mr. Jeremiah, Bridge End Inn, Cwmffrwdoer	do.
Five Dwelling-houses at Field Head, Kirkheaton ..	.....	J. Berry, Architect and Surveyor, 3, Market-place, Huddersfield	do.
Three Self-contained H'ses, etc., Stephen-st., Consett	Mr. W. Aynsley	T. H. Murray, Architect and Surveyor, Consett	do.
Mosaic Paving of Engine Room Floor	Wimbledon U.D.C.	Electricity Works Offices, Durnsford-road, Wimbledon	do.
District Fire Station, Odsal Top	Bradford Corporation	City Architect, Whitaker-buildings, Brewery-street, Bradford	June 8
Plumbing, etc., Temporary Hospital, Swinton Schools	Manchester Guardians	A. J. Murgatroyd, Architect, 23, Strutt-street, Manchester	do.
Painting Outside of Crumpsall Workhouse	do.	do.	do.
Superstructure of Temp. Hospital, Swinton Schools	do.	do.	do.
Primitive Methodist Church Schools, Abbeydale-road	Trustees of Carterknowle Prim. C'h.	Hall & Fenton, Architects, 14, St. James'-row, Sheffield	do.
Painting, etc., at Children's Homes, Rothwell Haigh	Hunslet Guardians	F. W. Mee, Clerk, Union Offices, Hunslet, Leeds	do.
Painting, etc., at Union Offices, Hunslet	do.	do.	do.
Stores	Middleton Corporation	E. E. J. Anderson, Gas Engineer, Middleton	do.
Enlargement of Water Filter Beds, Layland Green..	Ashton-in-Makerfield U.D.C.	T. Burgess, Waterworks' Engineer, Ashton-in-Makerfield	do.
Vicarage, Newry	Vicar, etc., St. Mary's, Newry	W. J. Watson, Architect, Benvenue, Rostrevor	do.
Road Works, Whitton-road	Twickenham U.D.C.	F. W. Pearce, Surveyor, Town Hall, Twickenham	do.
Agricultural Drain Pipes	Manchester Cleansing Committee ..	R. Williamson, Town Hall, Manchester	do.
Repairs to Labourers' Cottages in Duleek	Meath R.D.C.	T. Dowdall, Clerk, Board Room, Drogheda Workhouse	do.
New Road, etc., Gilfach Bargoed	Mr. A. C. Thomas	W. Harris, Architect and Surveyor, Gilfach Bargoed	do.
Materials	Raunds U.D.C.	T. Yorke, Engineer and Surveyor, Raunds, Northants	do.
Alter., etc., Caersalem Newydd Bap. Chap., Tirdennaw	.....	Chapel House, Tirdennaw, near Swansea	do.
Casual Working Cells, etc., Workhouse, New Romney	Romney Guardians	Master of the Workhouse	do.
*Erection, etc., of Wall	Kingston-on-Thames Corporation ..	Borough Surveyor, Kingston-on-Thames	do.
Painting, etc., Calverley Hospital, Thornbury	Joint Hospital Board	At the Hospital, Thornbury	June 9
Restoration, Muiryhall Croft Dwelling H'se, Urquhart	.....	G. R. M'Garva, Factor, Innes, Elgin	do.
Additions to Broomhill Farmsteading, Urquhart	.....	do.	do.
Additions to Hatton Farmsteading, Lhanbryd	.....	do.	do.
Pair of Semi-detached Villas at Heaton	.....	Walker & Collinson, Architects, Swan-arcade, Bradford	do.
Painting 4,500 lineal yds. of Iron Fencing, also Bridge	Hartwood Asylum	Clerk of Works at the Asylum, Hartwood, Lanark	do.
Stone-breaking Machine and Screening Plant	Gravesend Town Council	Borough Surveyor's Office, Town Hall, Gravesend	do.
Sewer, Ann-street, etc., Blairgowrie	Town Council	Burgh Surveyor's Office, George-street	do.
Sewerworks, Lower Hove, Plymstock	Plymton St. Mary R.D.C.	F. A. Clark, 83, Old Town-street, Plymouth	do.
Paving, etc., of Carriageways	Edinburgh City Council	Mr. Proudfoot, City Road Surveyor, City-chambers, Edinburgh..	do.
Granolithic Work on Footways	do.	do.	do.
Retort Bench	Renfrew Town Council	Engineer at the Gasworks	do.
Engines and Exhausters	do.	do.	do.
Condensers	do.	do.	do.
Purifiers	do.	do.	do.
Boiler	do.	do.	do.
Additional Rooms for Nurses at Cardiff Workhouse	The Guardians	E. Seward, F.R.I.B.A., Queen's-chambers, Cardiff	June 10
Electric Light Installation, Uphall Lighting District	Bathgate District Committee	A. Lindsay, Engineer, 11, Jamaica-street, Glasgow	do.
Superintendent's House, Royal Victoria Hos., Belfast	.....	S. P. Close, Architect, Donegall-square-buildings, Belfast	do.
Three Sliding Partitions at Schools	Plymouth Education Authority	E. Chandler Cook, Secretary, 18, Princess-square, Plymouth	do.
Gamekeeper's Cottage, Dykeside, Birnie	.....	J. Smith, Factor, Seafield Estates Office, Elgin	do.
Alterat'ns, etc., Wesleyan Methodist Chp, Teignmouth	The Trustees	T. Hambley, Bank-street, Teignmouth	do.
Making-up Streets	Rhondda U.D.C.	W. J. Jones, Engineer, Public Offices, Pentre, Rhondda	do.
Relaying Sewer at Tynybedw	do.	do.	do.
Granite	Halesworth U.D.C.	C. H. White, Clerk, Halesworth	do.
Alterations to Protestant Hall, Enniskillen	.....	T. Elliott, Architect, Darling-street, Enniskillen	do.
*New Coastguard Buildings at Leven, Fife	Admiralty	Director of Works Department, 21, Northumberland-avenue, W.C.	do.
Repairs, etc., Hartley University Coll., Southampton	The Council	The College Office	June 11
Painting Externally Twelve Schools	Hull Education Committee	J. P. Riley, Education Offices, Albion-street, Hull	do.
Colouring and Whitewashing Thirteen Schools	do.	do.	do.
Condensing Plant	Portsmouth Town Council	A. Hellard, Town Clerk, Town Hall, Portsmouth	do.
Materials, Cornsay Colliery	.....	Ferens & Love, Market-place, Durham	do.
Cleaning and Painting Poulton-road Schools	Wallasey Education Committee	W. H. Travers, Dis. Engr., Public Offices, Egremount, Cheshire..	do.
Cleaning & Painting Riverside Schools, Desmesne-st.	[redacted] do.	do.	do.
Wesleyan Chapel, Exelby, near Bedale	.....	T. Hogg, Exelby, Bedale	do.
904 tons of Broken Granite	Wakefield R.D.C.	F. Massie, A.M.Inst.C.E., Tetley House, Wakefield	do.
765 tons of Broken Whinstone	do.	do.	do.
3,675 tons of Broken Furnace Slag or Limestone	do.	do.	do.
370 tons of Broken Ballast	do.	do.	do.
Team Labour	do.	do.	do.
Painting, etc., Fingerposts, Milestones, Fencing, etc.	do.	do.	do.
Thirty-four Dining Benches at Workhouse	Plymouth Guardians	W. Adams, Clerk, 13, Princess-square, Plymouth	do.
Police Court at Merthyr Tydfil	Glamorgan County Council	W. E. R. Allen, Glamorgan County C'l. Offices, Westgate-st., Cardiff	do.
Painting, etc., Bethlehem Congregational Chap., Rhos	.....	54, Hall-street, Rhos	do.
Farmhouse and Pair of Cottages, Chisledon, Wilts ..	.....	W. Drew & Sons, Archs. and Survs., 28, Regent-circus, Swindon	do.
Stores	Edinburgh & District Tramways Co.	J. E. Pitcairn, 1, South Charlotte-street, Edinburgh	do.
Mission Hall, etc., Troedyrhiw	.....	The Church Vestry	June 12
Painting, Repairs, etc., Uplands Schools, Bexley Heath	The Managers	E. Box, Architect, Market-place, Bexley Heath	June 13
Stores	Direct'rs, Powell-Duffryn St. Coal Co.	Stores Manager, Aberaman Offices, near Aberdare	do.
Lancashire Boiler	Southampton Corporation	J. A. Crowther, Boro' Engineer, Municipal Offices, Southampton	do.
Painting Railings, Central Park, Ilford	Ilford U.D.C.	H. Shaw, Surveyor, Public Offices, Ilford, Essex	do.
Painting Pavilion and Bandstand	do.	do.	do.
Paving Ley-street, Ilford	do.	do.	do.
Rebuilding Fox and Hounds Inn, Bridestowe	Trustees of Hamlyn Estate	B. H. Harbottle & Son, Architects, County-chambers, Exeter	do.
Making-up Russell-road	Felixstowe and Walton U.D.C.	Office of the Surveyor, Town Hall, Felixstowe	do.
Granite, Wickham Market	Plomesgate R.D.C.	T. W. Read, Clerk, Board Room, Wickham Market	do.
Carting Road Material	do.	do.	do.
Four Dust Vans	Wimbledon U.D.C.	C. H. Cooper, Engr. & Surv., Council Offices, Broadway, Wimbledon	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., supplied by	Tenders to be Delivered
Cranes, Granton Works	Edinburgh, etc., Gas Commissioners	W. R. Herring, M.Inst.C.E., New-street Works, Edinburgh	June 13
*Workmen's Cottages and Making-up Rowsley-avenue	Hendon U.D.C.	Council's Engineer, Council Offices, Hendon, N.W.	do.
Permanent Way for Tramways	Warrington Corporation	Preece & Cardew, 8, Queen Anne's-gate, Westminster	June 14
Broken Granite	Hertford Corporation	T. J. Sworder, Town Clerk, Hertford	do.
*Reconstruction of Bridges, etc.	Kent County Council	F. W. Ruck, County Architect, Maidstone	do.
*Reconstruction of Bridge, Dartford	do.	do.	do.
*Works of Street Improvement	Bromley Borough Council	Borough Engineer, Municipal Offices, Bromley, Kent	do.
Steel Lattice Girder Bridge over the Rye at Ness	Kirbymoorside R.D.C.	J. E. Parker, C.E., Post Office-chambers, Newcastle-on-Tyne	June 15
Deck Spans for New Baraker Bridge	East Indian Ry. Co.	C. W. Young, Nicholas-lane, London, E.C.	do.
Extensions to Offices, etc., Dudley	Electric Lighting & Tramways Com.	R. P. Wilson, Engineer, 66, Victoria-street, Westminster, S.W.	do.
Transept at Leannor Church, Pwllheli	.....	Harold Hughes, Diocesan Architect, Bangor	do.
*Making-up Road	Chiswick U.D.C.	Council's Surveyor, Town Hall, Chiswick	do.
Coastguard Station, Achill Head, co. Mayo	Board of Public Works	H. Williams, Secretary, Office of Public Works, Dublin	June 16
Road between Cleave and Higher Storridge, Diptford	Totnes R.D.C.	A. Tucker, Highway Surveyor, Hazard, Totnes	do.
Whinstone, Slag	Norton U.D.C.	W. Watson, Surveyor, Council-buildings, Norton, Malton	do.
*New Coastguard Detachment, Speeton, Yorkshire	Admiralty	Director of Works Department, 21, Northumberland-avenue, W.C.	June 17
*New Coastguard Buildings, Prawle Point, S. Devon	do.	do.	do.
Byre, Cumberland Lunatic Asylum	Asylum Committee	G. D. Oliver, F.R.I.B.A., County Architect, Carlisle	June 18
Granite	Yeardsley-cum-Whaley U.D.C.	S. Taylor, Solicitor, Buxton	do.
Painting, etc., Padfield Wesleyan Buildings	.....	W. Smith, 37, Port-street, Padfield, Glossop	do.
Sewage Pumps and Gas Engines	Kingswinford R.D.C.	W. Fiddian, F.S.I., Stourbridge	June 20
Thirty-two Miles of Pipe Sewers, etc.	do.	do.	do.
Engine Houses, Wordsley and Ashwood	do.	do.	do.
Twenty-eight Miles of Pipe Sewers	do.	do.	do.
Electric Light Plant, Parkside Asylum, Macclesfield	Committee of Visitors	Lacey, Sillar, & Leigh, 2, Queen Anne's-gate, Westminster, S.W.	do.
Electric Light Wiring and Fittings	do.	do.	do.
Electric Light Installation at Baths, Goulston-st., E.	Stepney Borough Council	M. W. Jameson, Borough Engineer, 15, Gt. Alie-st., Whitechapel, E.	do.
Painting Isolation Hospital, Thorne	The R.D.C.	J. Stanley, Surveyor, Thorne	do.
Church, Loughglynn, co. Roscommon	Very Rev. Canon White	D. W. Morris, 68, Harcourt-street, Dublin	do.
Tower, etc., Catholic Church, Mountmellic	Very Rev. J. J. Doyle	W. H. Byrne & Son, Architects, 20, Suffolk-street, Dublin	do.
Two 25-k.w. Steam Dynamos, etc.	Deptford Borough Council	F. H. Medhurst & Lloyd, Engineers, 13, Victoria-st., Westminster	June 21
Switchboard	do.	do.	do.
Low Level Sewer, Hancock-road, Bow, etc.	The L.C.C.	Engineer's Department, County Hall, Spring-gardens, S.W.	do.
Heating, etc., Apparatus, Mousehole-lane, Pavilion	Southampton Corporation	J. A. Crowther, Boro' Engineer, Municipal Offices, Southampton	do.
Westgate and Junction Roads	Dartford U.D.C.	Surveyor's Office, Dartford	do.
1,000 Tons of Broken Guernsey Granite	Great Yarmouth Town Council	J. W. Cockrill, Borough Engineer, Town Hall, Great Yarmouth	do.
1,500 Tons of Broken Basalt	do.	do.	do.
*Underground Public Convenience	Brentford U.D.C.	Council's Engineer, Clifden House, Brentford	do.
*Extension of Wholesale Produce Market	do.	do.	do.
*Making-up Street	Wanstead U.D.C.	Council's Surveyor, Council Offices, Wanstead, N.E.	June 22
*Enlargement of Schools	Wimbledon U.D.C.	The Clerk, Council Offices, Wimbledon, S.W.	June 23
Broken Granite	Loughborough Finance Committee	A. H. Walker, Borough Surveyor, Town Hall, Loughborough	June 24
*New Coastguard Buildings	Admiralty	Director of Works Department, 21, Northumberland-avenue, W.C.	do.
C.I. Double-faced Sluice, Valves, and Hydrants	Nottingham Water Committee	S. Moore, Water Manager, St. Peter's Churchside, Nottingham	June 25
C.I. Main Pipes and Special Pipes	do.	do.	do.
Lead Piping and Ingots	do.	do.	do.
Gunmetal Taps and Ferrule Fittings	do.	do.	do.
Clay Cross Sewerage	Clay Cross U.D.C.	H. W. Taylor, Engineer, St. Nicholas-chambers, Newcastle-on-Tyne	June 27
*Enlargement of Parcel Office, Ipswich	Commissioners of H.M. Works	H.M. Office of Works, Storey's Gate, S.W.	June 28
Additions, etc., to School Buildings, Stoke-rd., Slough	.....	Lee & Farr, Architects, Slough	June 30
Chancel, St. Cuthbert's Church, Hebburn-on-Tyne	.....	Hedley School, Argyle-street, Hebburn	do.
*River Wall and Embanked Wharf, Belvedere-rd., S.E.	Borough of Lambeth	Henry Edwards, C.E., 346, Kennington-road, S.E.	do.
Slating Six Cottages	.....	Stainer Bros., Masons, Rothwell, Leeds	No date.
Making, etc., New Street, North-lane, Roundhay	.....	W. H. Lister, Architect, 5, Greek-street, Leeds	do.
Tunnelling under N.E. Railway, Stonefall	.....	R. Annakin, Contractor, 7, Dragon-avenue, Harrogate	do.
Alterations, etc., Kyle Union Poorhouse, Ayr	.....	W. Kerr, Architect, Ayr	do.
Additions to Kineholme, Otley	Mr. J. Hastings Duncan, M.P.	Messrs. Adkin & Hill, Architects, Prudential-buildings, Bradford	do.
Making of Holywood Golf Links	.....	J. S. Reade, Rialto, Holywood, co. Down	do.
200 yds. of Wood Fencing	.....	J. Brunton, New Cross-street, Hull	do.
Sunday School Buildings, West End, Hexham	United Methodist Free Church	T. E. Davidson, Architect, 32, Clayton-street West, Newc.-on-Tyne	do.
Altera., etc., Heating Appara., Arthur's Hill School	Newcastle-on-Tyne Educa. Commtt.	A. Goddard, Sec., Educa. Offices. Northumberland-rd., Newcastle	do.
Painting and Cementing of Steamships	.....	Box P 7, Newcastle "Chronicle" Office	do.
Clearing and Opening-up Craighead Quarry	.....	R. Stewart, 66, Hanover-street, Edinburgh	do.
Alterations, etc., to Spelsbury School, near Charlbury	.....	Tollit & Lee, Architects, 7, St. Aldate's-street, Oxford	do.
English C.M. Chapel at Ferndale	The Trustees	W. M. Lewis & Morgan, Architects, Market-square, Pontypridd	do.
Alterations, etc., Midland Inst. for Blind, Nott'ham	.....	H. W. P. Pine, Secretary	do.
*Erection of School Buildings	Walthamstow Education Committee	H. Prosser, Architect, Committee Offices, Walthamstow	do.
*Painting, etc., Military Hospital, Colchester	War Department	R.E. Office, Colchester	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*Head of Engineering Department	Northern Polytechnic	275*l.*	June 8
*Teacher of Cookery	do.	110*l.*	do.
*Teacher of Architectural Drawing	do.	Not Stated	do.
*Teacher of Brickwork	do.	Not Stated	do.
*Drawing Office Assistant	Northampton Institute, E.C.	Not Stated	June 11
*Craftsmaster, Darenth Asylum	Metropolitan Asylums Board	200*l.*, etc.	June 13
*Clerk of Works	Portsmouth Drainage Committee	4*l.* 4*s.* per Week	June 16
*Clerk of Works	Ealing Corporation	Not Stated	No date.

Those marked with an asterisk (*) are advertised in this Number. *Competitions*, —. *Contracts*, lv. vi. viii. x. *Public Appointments*, xvi.

TENDERS.—*Continued from page 619.*

LONDON.—For the erection of chancel, lady chapel, organ chamber, and west porches at St. Peter's Church, Hornsey, N. Messrs. James Brooks, Son, & Godsell, architects, 35, Wellington-street, Strand, W.C.:—

H. Knight & Son	£4,896	Rudd & Son	£4,360
Collins & Godfrey	4,757	W. Parmenter*	4,348
T. Rider & Son	4,697	Bentley & Son‡	4,162
J. J. Wise	4,482		

‡ Withdrawn.

LOUGHBOROUGH.—For erecting new union offices, Ashby-road, for the Guardians. Mr. W. T. Hampson, architect, Ashby-road, Loughborough:—

Builder: A. J. Wileman, Boyer-street, Loughborough*	£425 0 0
Plumber: J. Perkins, Leicester-road, Loughborough*	93 9 4
Joiner: Watson & Camm, Nottingham-road, Loughborough*	159 10 0
Painter: J. Warriner, 20, Cobden-street, Loughborough*	16 0 0

MANSFIELD.—For painting and cleaning Rosemary Schools, for the Education Committee. Messrs. Vallance & Westwick, architects, Mansfield:—

W. Thompson	£258 5 0	C. G. Greenwood	£168 3 11
C. Scott	243 6 0	J. Millott	108 8 8
J. Robinson & Son			
West Hill Drive*	168 0 0		

MERTHYR TYDFIL.—For rebuilding 103, High-street, Merthyr, for Messrs. J. Jones & Sons, drapers. Mr. Charles Morgan Davies, architect, etc., 112, High-street, Merthyr Tydfil:—

S. Hawkins	£1,010	J. Jenkins, Canal Wharf, Merthyr*	£889
J. Williams	963		

MERTHYR TYDFIL.—For rebuilding No. 104, High-street, for Mr. Bernasconi, fancy goods dealer. Mr. C. M. Davies, Architect, 112, High Street, Merthyr:—

J. Williams	£1,113 3 9	E. L. Sullivan Mardy House, Merthyr*	£905 0 0
J. Jenkins	970 0 0		

MOUNTAIN ASH.—For erecting a chapel, High-street, for the Welsh Congregational Church. Mr. T. W. Millar, architect and surveyor, Mountain Ash:—

Jones Bros., Mountain Ash £2,500

NORWICH.—For provision of a Lancashire boiler, for the Norwich Isolation Hospital. Mr. A. E. Collins, City Engineer, Norwich:—

Smithdale & Son	£590 0 0	A. Dodman & Co.	£409 0 0
Mansfield, Owen, & Co.	515 0 0	Tomlinson & Milan	400 0 0
Cradley Boiler Co.	430 0 0	Low Moor Co., Ltd.	390 0 0
Davey, Paxman, & Co.	422 10 0	E. R. & F. Turner, Ltd.	379 0 0
Coltman & Sons	420 0 0	Galloways, Ltd.	370 0 0
E. Danks & Co.	415 0 0	D. Young, Witney, Oxfordshire*	348 0 0
J. Thompson	410 0 0		

Seating and Setting of Boiler.

Mansfield, Owen, & Co.	£110 0 0	A. S. Lincoln	£79 0 0
A. D. Boddy & Son	97 0 0	J. S. Smith	69 0 0
D. Young	95 0 0	Downing Bros., Victoria-street, Norwich*	65 10 0
W. J. Hannant	88 0 0		

PARRACOMBE.—For erecting a house at Parracombe, near Barnstaple, for Mr. A. G. Buhl. Mr. J. C. Southcombe, architect and surveyor, Barnstaple Quantities by the architect:—

R. Goss & Sons, Combe Martin, R.S.O.* £1,019 15

PENGAM.—For erecting thirty houses near Rhymney Railway Station, for Glan-y-nant Building Club. Mr. P. Vivian Jones, architect and surveyor, Hengoed :—

E. Edwards..	£5,598 15 0	Paul & Sons ..	£5,280 0 0
Lewis & Evans	5,580 0 0	Matthews	5,250 0 0
Gibbon	5,550 0 0	L. Davies	5,190 0 0
Vodden & Lee	5,475 0 0	E. Hughes, Bargoed, via Cardiff*	5,145 0 0
Edwards & Hopkins ..	5,400 0 0		

REIGATE.—For street improvement works in Lyndale-road, for the Town Council. Mr. F. T. Clayton, C.E., Borough Surveyor, Municipal-buildings, Reigate :—

S. Kavanagh & Co.	£499 0 0	Streeters & Todhunter	£352 0 0
J. Jackson	450 0 0	G. S. Faulkner, Reigate*	345 0 0
E. Isles.....	399 0 3		

ROTHERHAM.—For erecting an isolation hospital, with boundary wall, drainage, roads, etc., Badsley Moor-lane, for the Borough Council. Mr. J. Platts, County Borough Architect, High-street, Rotherham. Quantities by Architect :—

W. Thornton & Son, Rotherham‡.... £11,994

‡ Recommended for acceptance.

ROTHERHAM.—For paving, etc., Shaftesbury-street and Truro-place, for the Highway Committee. Mr. G. Jennings, Borough Surveyor, Rotherham. Quantities by Surveyor :—

Shaftesbury-street.

T. Green, Rotherham‡ £156 10 0

Truro-place.

T. Green, Rotherham* 185 8 0

‡ Recommended for acceptance.

SHEFFIELD.—For alterations and additions to Truant Industrial School, Hollow Meadow, for the Education Committee :—

Thomas Roper & Sons, Ashdell-road, Broomhill, Sheffield* .. £1,389 2 6

SITTINGBOURNE.—For the erection of new business premises in Station-street, Sittingbourne, and for drainage works, for the Sittingbourne Co-operative Society, Ltd. Mr. Ernest C. Pearcy, architect, 2, crescent-street, Sittingbourne :—

Elmore & Sons	£1,038 0 0	R. High	£898 10 0
T. Monk	975 0 0	G. Bowes	863 0 0
L. Seager....	956 0 0	H. J. Tidy, Sittingbourne* .	835 10 0
H. Gardler ..	911 0 0		
E. Bishop ..	898 15 0		

SOUTHALL.—For erecting a Carnegie Library, for the Southall-Norwood Urban District Council. Mr. R. Brown, architect, Public Offices, Norwood :—

General Builders' Association Ltd.	£5,949 0 0	Ford & Walton	£4,935 0 0
W. Wallis ..	5,279 18 6	Whitehead ..	4,875 0 0
Brightman ..	5,217 0 0	Wisdom Bros.	4,862 0 0
T. Bendon ..	5,148 0 0	M. Coles.....	4,828 0 0
W. Mash	5,109 2 6	Drake & Son..	4,769 0 0
E. Moss	5,000 0 0	A. & B. Hanson	4,749 0 0
Kearley	5,000 0 0	Galbraith Bros.	4,746 0 0
E. Chamberlain	4,995 0 0	J. Dickens....	4,690 0 0
J. Dorey, Ltd.	4,988 0 0	G. Gibson	4,672 0 0
J. Renshaw..	4,975 0 0	R. Gurr & Sons	4,600 0 0
		Ferguson & Co., Tottenham†.	4,492 0 0

STANLEY.—For 600 yards of sanitary pipes, etc., Shield-row, for the Urban District Council. Mr. J. Routledge, Surveyor, Council Offices, Stanley :—

A. Errington..	£349 13 6	W. B. Parker	£280 8 3
G. E. Christopher	346 7 0	J. Robson ..	264 19 (
Tough Bros...	340 7 0	A. Routledge	264 12 6
Ayton & Sons	330 11 3	Johnson & Strong, Stanley*	258 18 5
T. Gatis	303 14 0		
G. E. Simpson.....	296 8 9		

SOUTHAMPTON.—For erecting a wharf front, etc., at Woolston. Mr. E. Cooper Poole, A.M.Inst.C.E., 5, Portland-street, Southampton :—

Osmaw	£1,387	Douglas & Richards	£1,095
Playfair & Toole ..	1,380	Daysh, Southampton*	1,049
Grace	1,097		

SUNBURY-ON-THAMES.—For new Congregational Church at Sunbury-on-Thames. Messrs. H. F. Coales and H. R. Coales, architects, Sunbury. Quantities by architects :—

Knight & Sons	£1,398 10 0	R. T. Hughes & Co., Ltd.	£1,270 0 0
T. & S. Fisk	1,392 4 0	W. H. Gaze & Sons	1,239 0 0
Wheatley & Sons	1,375 0 0	W. Waite* ..	1,208 18 7
E. Chamberlain	1,350 0 0	E. Potterton‡	1,182 6 0
Lock Bros. ..	1,311 5 0		

‡ Withdrawn.

TWICKENHAM.—Accepted for the erection of three steam boilers, refuse-destructor plant, boiler settings, etc., for the Urban District Council. Mr. W. Fairley, engineer, 69, Victoria-street, Westminster, S.W. :—

Pumping Machinery.

Simpson & Co., Ltd., Grosvenor-road, S.W.* £6,800

Refuse Destructor.

Meldrum Bros., Timperly* £2,665

Flues and Boiler, Auxiliary Plant and Pipe Work.

Alton & Co., Willesden* £1,459

Boilers.

Taylor & Son, Marsden* £1,360

WOODFORD GREEN.—For alterations and additions to building at corner of High-road and Manor-road, Woodford Green, to form Men's and Youths' Club, for Mr. J. R. Roberts. Mr. A. W. Hudson, architect and surveyor, 87, Finsbury-pavement, E.C. :—

T. Osborn & Sons..	£1,986	C. S. Foster & Sons	£1,850
J. S. Hammond & Son	1,931	S. J. Scott	1,760
C. Vigor & Co.	1,888	F. J. Coxhead* ..	1,697

WOODFORD-GREEN.—For the erection of a new post office at Woodford-Green, Essex, for the Commissioners of H.M. Works and Public Buildings :—

S. Kind	£3,550 0 0	J. Shelbourne & Co.	£2,982 0 0
E. Stevenson & Sons....	3,520 0 0	C. S. Foster & Son	2,975 0 0
G. J. Hosking	3,447 0 0	T. Osborne & Sons	2,974 0 0
General Builders, Ltd...	3,497 0 0	T. Bruty	2,960 0 0
B. E. Nightingale	3,181 0 0	F. & A. Willmott	2,938 0 0
Speechley & Smith	3,130 0 0	L. Whitehead & Co., Ltd.	2,930 0 0
E. Brown & Son	3,129 10 0	Rowley Bros.	2,900 0 0
E. D. Pearcy	3,050 0 0	A. W. Nash..	2,898 0 0
C. Ansell	3,030 0 0	Foster Bros. .	2,859 0 0
		P. Banyard..	2,720 0 0

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